



December 18, 2013

BY U.S. MAIL
RETURN RECEIPT REQUESTED



Ms. Susan Mackert
Department of Environmental Quality
Northern Regional Office
13901 Crown Court
Woodbridge, VA 22193

RE: Dominion North Anna Power Station; VPDES Permit No. VA0052451
Reissuance Application Addendum #4

Dear Ms. Mackert:

Virginia Electric and Power Company (Dominion) submitted an application for the renewal of VPDES Permit No. VA0052451 for the North Anna Power Station to DEQ on April 9, 2013. Addendum #1 to the application was submitted on July 5, 2013, Addendum #2 was submitted on July 30, 2013 and Addendum #3 was submitted on October 31, 2013. With this transmittal, we are submitting the attached Addendum #4 to the application to incorporate two new outfalls (Outfall 028 and 118) into the permit.

In response to the 2011 events at the Fukushima, Japan nuclear facility, Dominion is in the process of expanding capabilities to respond to a Beyond Design Basis (BDB) event. A BDB event is a natural disaster that results in damage beyond the design of the station. This effort is being conducted in accordance with Nuclear Regulatory Commission (NRC) requirements. As part of the BDB effort for North Anna (Units 1&2), Dominion is obtaining back-up mobile water pumps. These pumps can be mobilized to provide water to critical safety equipment in the event that offsite power and/or access to the ultimate heat sink were lost. If this occurred, the existing service water pumps would be unavailable. In a BDB event, these pumps could potentially be used to provide water for critical uses including water to the reactor vessel, water to the steam generator for cooling the reactor vessel, water for the spent fuel pool and water for spraying the containment structure.

Dominion currently has two BDB pumps onsite as discussed in the attached November 15, 2012 email and anticipates having a total of approximately nine BDB pumps of various sizes by the end of 2014. In order to ensure that the pumps are in working order, they must be tested periodically. Initially Dominion plans to test the pumps at a cove east of the discharge canal, identified as Outfall 028 on the attached outfall location map. We anticipate establishing an additional testing site on the discharge canal in the future, Outfall 118. During a test, water would be pumped from the lake or the discharge canal and immediately re-circulated back into the source at the same location without coming in to contact with any

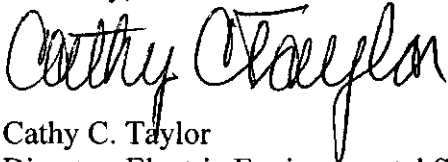
other equipment or processes associated with the North Anna Power Station's normal operation.

We anticipate continuing to test each pump on an approximately quarterly basis with a run time of about 30 minutes to an hour each event. The two pumps currently onsite have the highest capacity of the planned BDB pumps with a capacity of approximately 1,400 gpm. We anticipate running the pumps no longer than one hour during a test. The maximum anticipated volume pumped and re-circulated during a pump test is approximately 84,000 gallons. However, our estimate of the actual maximum likely volume pumped is approximately 14,000 gallons. We received the attached email from DEQ confirming that the BDB pump testing is excluded from Virginia Water Protection (VWP) Permit requirements.

We request that the BDB Pumps be identified as Outfall 028 and Outfall 118 in the VPDES permit. The applicable information is provided in the attached revised EPA Form 2C, process flow diagram and outfall location map.

Should you have any questions and/or require additional information, please contact Ken Roller at 804-273-3494 or via email at kenneth.roller@dom.com.

Sincerely,

A handwritten signature in black ink, appearing to read "Cathy C. Taylor". The signature is fluid and cursive, with the first name "Cathy" being more prominent than the last name "Taylor".


Cathy C. Taylor
Director, Electric Environmental Services

Enclosure

Please type or print in the unshaded areas only

EPA ID Number (Copy from Item 1 of Form 1)
110001891114

Form Approved
OMB No. 2040-0086
Approval expires 3-31-98

Form 2C NPDES				U.S. ENVIRONMENTAL PROTECTION AGENCY APPLICATION FOR PERMIT TO DISCHARGE WASTEWATER EXISTING MANUFACTURING, COMMERCIAL, MINING AND SILVICUTLRAL OPERATIONS Consolidated Permits Program			
I. Outfall Location							
For this outfall, list the latitude and longitude of its location to the nearest 15 seconds and name of the receiving water.							
Outfall Number (list)	Latitude			Longitude			Receiving Water (name)
	Deg	Min	Sec	Deg	Min	Sec	
001	38	00	30.2	-77	43	43	Lake Anna
101	38	03	5.8	-77	47	3.1	Discharge Canal to Waste Heat Treatment Facility to Lake Anna
103	38	03	5.8	-77	47	3.1	Discharge Canal to Waste Heat Treatment Facility to Lake Anna
104	38	03	5.8	-77	47	3.1	Discharge Canal to Waste Heat Treatment Facility to Lake Anna
105	38	03	5.8	-77	47	3.1	Discharge Canal to Waste Heat Treatment Facility to Lake Anna
107	38	03	5.8	-77	47	3.1	Discharge Canal to Waste Heat Treatment Facility to Lake Anna
108	38	03	5.8	-77	47	3.1	Discharge Canal to Waste Heat Treatment Facility to Lake Anna
109	38	03	5.8	-77	47	3.1	Discharge Canal to Waste Heat Treatment Facility to Lake Anna
110	38	03	5.8	-77	47	3.1	Discharge Canal to Waste Heat Treatment Facility to Lake Anna
111	38	03	46	-77	47	13.4	Discharge Canal to Waste Heat Treatment Facility to Lake Anna
112	38	03	5.8	-77	47	3.1	Discharge Canal to Waste Heat Treatment Facility to Lake Anna
113	38	03	5.8	-77	47	3.1	Discharge Canal to Waste Heat Treatment Facility to Lake Anna
114	38	03	5.8	-77	47	3.1	Discharge Canal to Waste Heat Treatment Facility to Lake Anna
115	38	03	5.8	-77	47	3.1	Discharge Canal to Waste Heat Treatment Facility to Lake Anna
116	38	03	5.8	-77	47	3.1	Discharge Canal to Waste Heat Treatment Facility to Lake Anna
117	38	03	5.8	-77	47	3.1	Discharge Canal to Waste Heat Treatment Facility to Lake Anna
118	38	03	5.8	-77	47	3.1	Discharge Canal to Waste Heat Treatment Facility to Lake Anna
009	38	03	43.6	-77	47	31	Lake Anna
013	38	03	43.6	-77	47	24.4	Lake Anna
016	38	03	43.6	-77	47	24.4	Lake Anna
020	38	03	43.6	-77	47	24.4	Lake Anna
021	38	03	43.6	-77	47	24.4	Lake Anna

028	38	03	39.2	-77	46	57.3	Lake Anna
II. Flows, Sources of Pollution, and Treatment Technologies							
<p>A. Attach a line drawing showing the water flow through the facility. Indicate sources of intake water, operations contributing wastewater to effluent, and treatment units labeled to correspond to the more detailed descriptions in Item B. Construct a water balance on the line drawing by showing average flows between intakes, operations, treatment units, and outfalls. If a water balance cannot be determined (e.g. for certain mining activities), provide a pictorial description of the nature and amount of any sources of water and any collection or treatment measures. See Attachment B.</p> <p>B. For each outfall, provide a description of (1) all operations contributing wastewater to the effluent, including process wastewater, sanitary wastewater, cooling water, and stormwater runoff; (2) the average flow contributed by each operation; and (3) the treatment received by the wastewater. Continue on additional sheets if necessary.</p>							
1. Outfall Number	2. Operations Contributing Flow		3. Treatment				
	a. OPERATION (list)	b. AVERAGE FLOW	a. DESCRIPTION	b. LIST CODES FROM TABLE 2C-1			
001	Discharges from the Waste Heat Treatment Facility (WHTF), which includes internal outfalls, at Dike 3	2335.8 MGD	Discharge to Lake Anna	4-A			
101	Condenser cooling water	1838.8 MGD	Discharge to discharge canal	1-O			
103	Process wastewater clarifier, including flow from the liquid radioactive waste management system Steam generator blowdown Package boiler blowdown Mat sump system Ion exchange waste Service water system high capacity blowdown (intermittent)	0.312 MGD	Ion exchange; discharge to discharge canal	2-J	1-O		
104	Turbine building sumps 1, 2, & 3 Storm water Fire water system line drains Misc. discharges of purified or raw lake water from various infrequent plant maintenance activities Chiller water Service water Condensate Storage Tanks AST Containment Sump Demineralizer Sump Plant condensers Bearing cooling water Temporary package boiler blowdown	0.288 MGD	O/W separator; discharge to discharge canal Neutralization	1-H 2-K	1-O		
105	Bearing cooling tower blowdown - Continuous blowdown - Lake to lake operation (intermittent)	0.084 MGD	Discharge to discharge canal	1-O			
107	Bearing cooling tower blowdown - Continuous blowdown - Lake to lake operation (intermittent) Strainer blowdown	Intermittent (has not discharge during 2008-2010 time period)	Discharge to discharge canal	1-O			
108	Service water overboard Batch blowdown overflow Straight-through cooling water Header maintenance	Intermittent (0.15 MGD for the 2008-2010 time period)	Discharge to discharge canal	1-O			
109	Hot well drain – Unit 1 Secondary system condensate	Intermittent (1.152 MGD for the 2008-2010 time period)	Discharge to discharge canal	1-O			
110	Hot well drain – Unit 2 Secondary system condensate	Intermittent (0.137 MGD for the 2008-2010 time period)	Discharge to discharge canal	1-O			
111	Unit 1 & 2 STP	0.03 MGD design daily avg flow 0.0058 MGD daily avg flow	See EPA Form 2A; Discharge to discharge canal	1-T, 1-L, XX, 3-A, 5-A, 1-U, 2-F	1-O		
112	Steam generator blowdown – Unit 1	0.204 MGD	Discharge to discharge canal	1-O			
113	Steam generator blowdown – Unit 2	0.204 MGD	Discharge to discharge canal	1-O			

114	Service water tie-on vault drain	Intermittent (0.0002 MGD for the 2008-2010 time period)	Discharge to discharge canal	1-O	
115	Service water system high capacity blowdown	Intermittent (has not discharge during 2008-2010 time period)	Discharge to discharge canal	1-O	
116	Vacuum priming pump	0.058 MGD	Discharge to discharge canal	1-O	
117	Salt storage pond	Intermittent (has not previously discharged)	Discharge to discharge canal	1-U 1-O	
118	BDB pumps	0.014 MGD	Discharge to discharge canal	1-O	
009	Settling pond: Groundwater; storm water; RO unit backwash; Bearing cooling tower water during maintenance activities; Ionics emergency shower wash post neutralization in holding tank	0.576 MGD	Sedimentation; Discharge to Lake Anna	1-U, 4-A	
013	Turbine building sumps #1 and #2 Stormwater Plant condensers Bearing cooling water Misc. discharges of purified or raw lake water from various infrequent plant maintenance activities	Intermittent (0.324 MGD for the 2008-2010 time period)	Discharge to Lake Anna	4-A	
016	Intake screen wash water	3.744 MGD	Discharge to Lake Anna	4-A	
020	Reverse Osmosis (RO) reject RO unit backwash (*beginning with Unit 3 construction)	0.216 MGD (RO reject only) 0.716 MGD (*including RO reject and RO backwash)	Discharge to Lake Anna	4-A	
021	RO drain line	Intermittent (has not discharge during 2008-2010 time period)	Discharge to Lake Anna	4-A	
028	BDB pumps	0.014 MGD	Discharge to Lake Anna	4-A	

CONTINUED FROM THE FRONT

C. Except for storm runoff, leaks, or spills, are any of the discharges described in Items II-A or B intermittent or seasonal?

☒ **YES** (complete the following table)

☐ **NO** (go to Section III)

1. OUTFALL NUMBER (list)	2. OPERATION(s) CONTRIBUTING FLOW (list)	3. FREQUENCY		4. FLOW				c. DUR- ATION (in days)
		a. DAYS PER WEEK (specify average)	b. MONTHS PER YEAR (specify average)	a. FLOW RATE (in mgd)		b. TOTAL VOLUME (specify with units)		
				1. LONG TERM AVERAGE	2. MAXIMUM DAILY	1. LONG TERM AVERAGE	2. MAXIMUM DAILY	
107	Bearing cooling tower blowdown - Continuous blowdown - Lake to lake operation (intermittent) Strainer blowdown	Varies	Varies	No discharge during 2008-2010 time period				n/a
108	Service water overboard Batch blowdown overflow Straight-through cooling water Header maintenance	Varies	Varies	0.15 MGD	0.15 MGD	0.15 MG	0.15 MG	1
109	Hot well drain – Unit 1 Secondary system condensate	1/ outage	1/ 18 months	1.152 MGD	1.152 MGD	1.152 MG	1.152 MG	1
110	Hot well drain – Unit 2 Secondary system condensate	1/ outage	1/ 18 months	0.137 MGD	0.137 MGD	0.137 MGD	0.137 MGD	1
114	Service water tie-in vault drain	Varies	Varies	0.0002 MGD	0.0002 MGD	0.0002 MG	0.0002 MG	1
115	Service water system high capacity blowdown	Varies	Varies	No discharge during 2008-2010 time period				n/a
117	Salt storage pond	Varies	Varies	No discharge to date				n/a
118	BDB pumps	Varies	Varies	0.014 MGD	0.084 MGD	0.014 MG	0.084 MG	1
013	Turbine building sumps #1 and #2; stormwater	Varies	Varies	0.324 MGD	0.324 MGD	0.324 MG	0.324 MG	1
021	RO drain line	Varies	Varies	No discharge during 2008-2010 time period				n/a
028	BDB pumps	Varies	Varies	0.014 MGD	0.084 MGD	0.014 MG	0.084 MG	1

III. PRODUCTION

A. Does an effluent guideline limitation promulgated by EPA under Section 304 of the Clean Water Act apply to your facility?

☒ **YES** (complete Item III-B)

☐ **NO** (go to Section IV)

B. Are the limitations in the applicable effluent guideline expressed in terms of production (or other measure of operation)?

☐ **YES** (complete Item III-C)

☒ **NO** (go to Section IV)

C. If you answered "yes" to Item III-B, list the quantity which represents an actual measurement of your level of production, expressed in the terms and units used in the applicable effluent guideline, and indicate the affected outfalls.

1. AVERAGE DAILY PRODUCTION			2. AFFECTED OUTFALLS (list outfall numbers)
a. QUANTITY PER DAY	b. UNITS OF MEASURE	c. OPERATION, PRODUCT, MATERIAL, ETC. (specify)	
N/A			

IV. IMPROVEMENTS

A. Are you now required by any Federal, State, or local authority to meet any implementation schedule for the construction, upgrading, or operation of wastewater treatment equipment or practices or any other environmental programs which may affect the discharges described in this application? This includes, but is not limited to, permit conditions, administrative or enforcement orders, enforcement compliance schedule letters, stipulations, court orders, and grant or loan conditions.

☐ **YES** (complete the following table)

☒ **NO** (go to Item IV-B)

1. IDENTIFICATION OF CONDITION, AGREEMENT, ETC.	2. AFFECTED OUTFALLS		3. BRIEF DESCRIPTION OF PROJECT	4. FINAL COMPLIANCE DATE	
	a. No	b. SOURCE OF DISCHARGE		a. REQ- UIRED	b. PRO- JECTED
N/A					

B. OPTIONAL: You may attach additional sheets describing any additional water pollution control programs (or other environmental projects which may affect your discharges) you now have underway or which you plan. Indicate whether each program is now underway or planned, and indicate your actual or planned schedules for construction.

☐ **MARK "X" IF DESCRIPTION OF ADDITIONAL CONTROL PROGRAM IS ATTACHED**

V. INTAKE AND EFFLUENT CHARACTERISTICS

NOTE: Tables V-A, V-B, and V-C are included on separate sheets number V-1 through V-9.

[illegible]

VI. POTENTIAL DISCHARGES NOT COVERED BY ANALYSIS

X YES (list all such pollutants below)

☐ **NO** (go to Item VI-B)

As radioactive releases at this facility are regulated by the Nuclear Regulatory Commission (NRC), they have not been listed here. See Attachment C for a list of other potential discharges not covered by analysis.

CONTINUED FROM THE FRONT

VII. BIOLOGICAL TOXICITY TESTING DATA

Do you have any knowledge or reason to believe that any biological test for acute or chronic toxicity has been made on any of your discharges or on a receiving water in relation to your discharge within the last 3 years?

☒ **YES** (identify the test(s) and describe their purpose below)

☐ **NO** (go to Section VIII)

Toxicity testing and reporting have been conducted in accordance with the requirements of Part I.C.1 of the VPDES permit. For outfall 001, the permit requires chronic 3-brood static renewal survival and reproduction tests with *Ceriodaphnia dubia* and chronic 7-day static renewal survival and growth tests with *Pimephales promelas*. A summary of the test results from 2008 – 2011 are below.

Year	<i>C. dubia</i>		<i>P. promelas</i>	
	NOEC Survival	NOEC Reproduction	NOEC Survival	NOEC Growth
April 2008	100%	100%	100%	100%
April 2009	100%	100%	100%	100%
April 2010	100%	100%	100%	25%
October 2010 ⁽¹⁾	-	-	100%	50%
October 2010 ⁽²⁾	-	-	100%	100%
April 2011	100%	100%	100%	100%

(1) Using Synthetic Freshwater

(2) Using softened Synthetic Freshwater

VIII. CONTRACT ANALYSIS INFORMATION

Were any of the analyses reported in Item V performed by a contract laboratory or consulting firm?

☒ **YES** (list the name, address, and telephone number of, and pollutants analyzed by, each such laboratory or firm below)

☐ **NO** (go to Section IX)

A. NAME	B. ADDRESS	C. TELEPHONE (area code & no.)	D. POLLUTANTS ANALYZED (list)
Primary Laboratories Inc.	7423 Lee Davis Rd., Mechanicsville, VA 23111	(804) 559-9004	See Attachment D
Pace Analytical	1638 Roseytown Rd., Greensburg, PA 15601	(724) 850-5600	See Attachment D
		()	
		()	
		()	
		()	

IX. CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

A. NAME & OFFICIAL TITLE (type or print)

Daniel G. Stoddard, Senior VP Nuclear Operations

B. PHONE NO. (area code & no.)

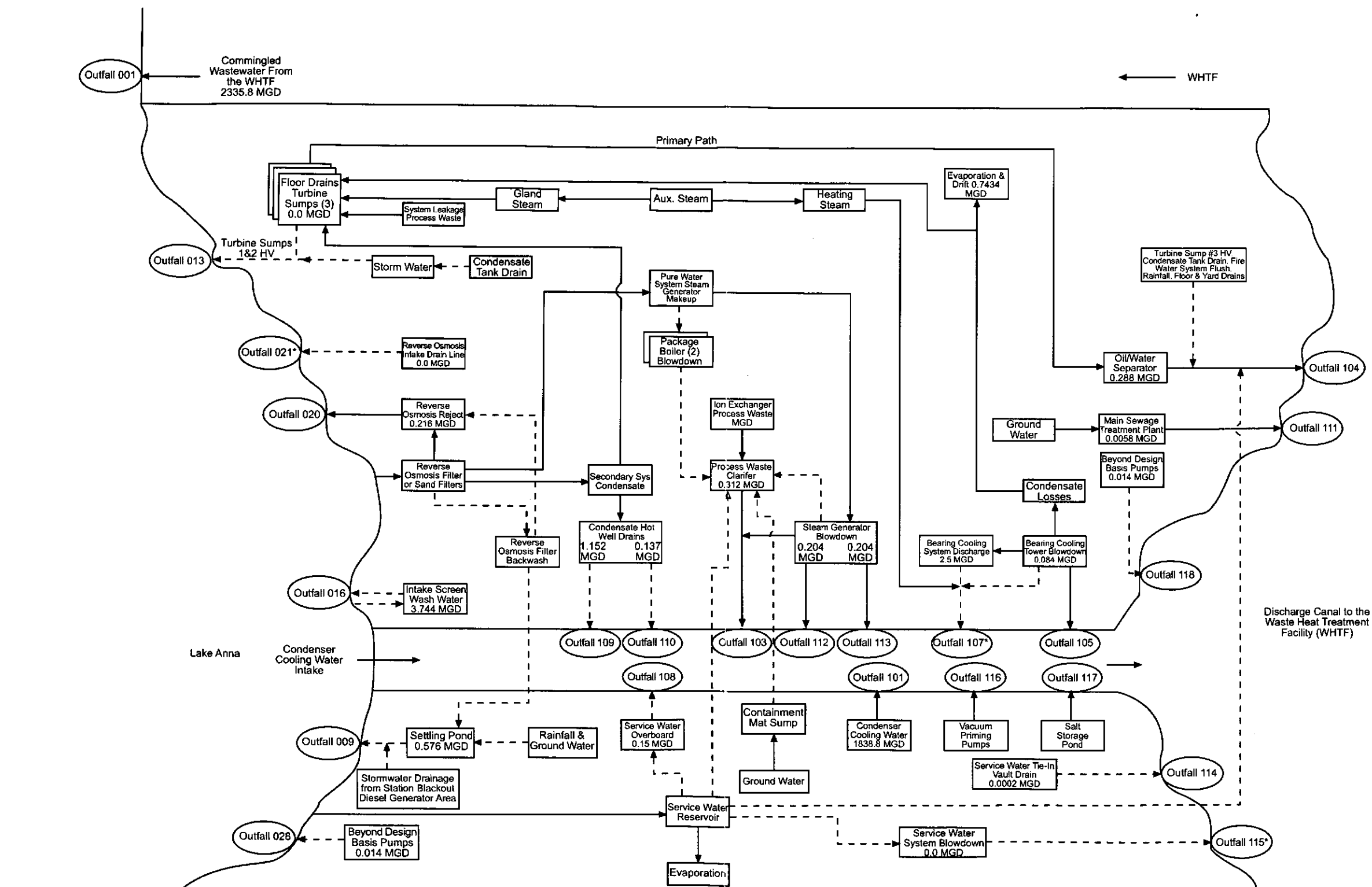
(804) 273-4390

C. SIGNATURE

Dan Stoddard

D. DATE SIGNED

12/17/2013

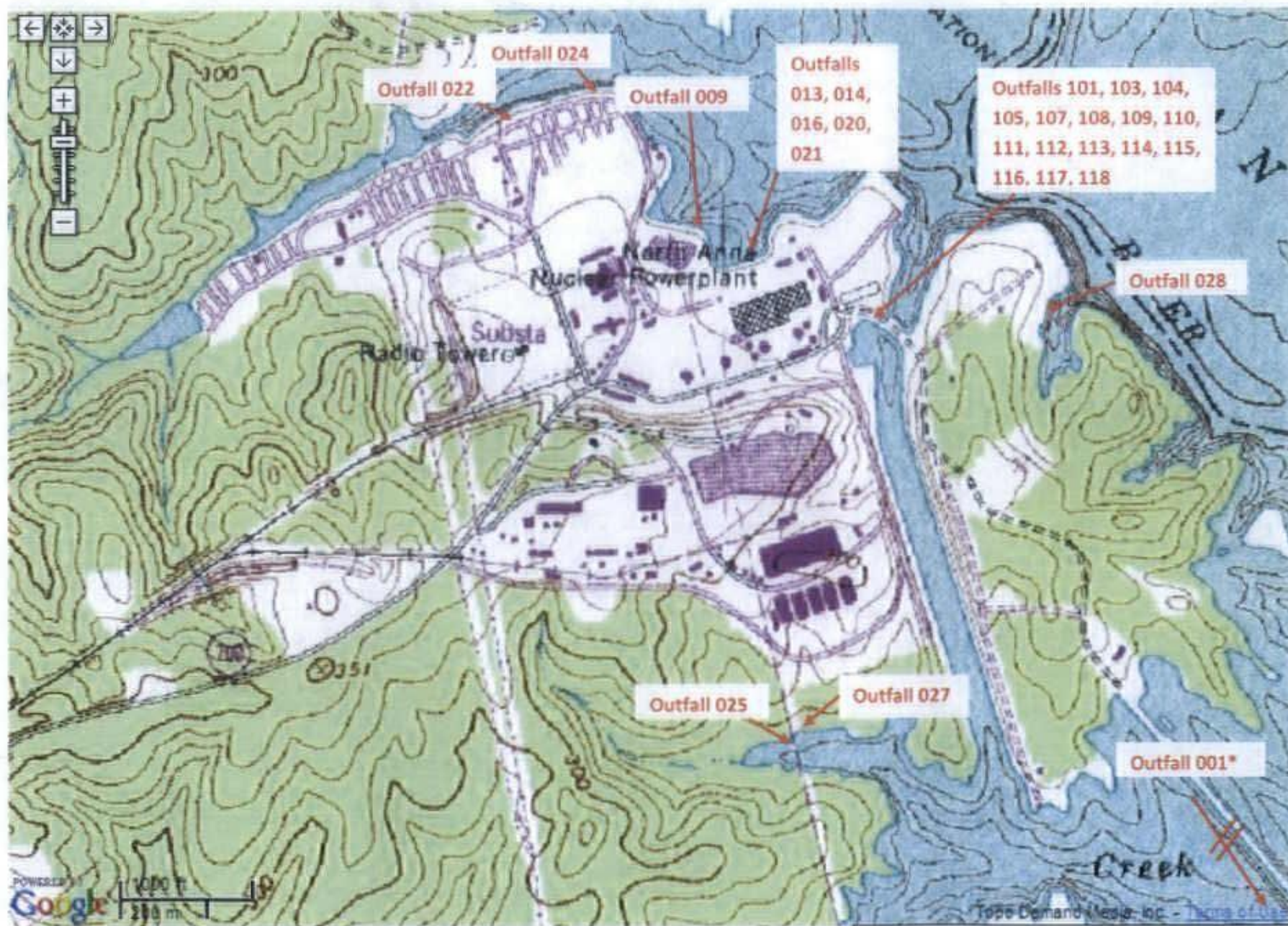


NOTES:

1. This drawing is required by EPA Form 3510-2C, Item 11.A to support North Anna VPDES permit No. VA0052451.
2. Flows are based on representative averages unless otherwise noted.
3. Dashed lines represent intermittent discharges.

*No Discharge Occurred From 2008-2010

Graphic No: NB198C



*Outfall 001 is down-lake, off the WHITE Lagoon 3 dam as depicted on URS topographic map (also included in this Attachment).

Mackert, Susan (DEQ)

From: Kenneth Roller (Services - 6) [kenneth.roller@dom.com]
Sent: Monday, January 06, 2014 3:58 PM
To: Mackert, Susan (DEQ)
Subject: Addendum #4 NAPS Application
Attachments: NAPS BDB pump test location.pdf

Susan,

Here is the November 15, 2012 email mentioned in Addendum #4 to the NAPS application.

Ken

From: Jason P Ericson (Services - 6)
Sent: Thursday, November 15, 2012 10:17 PM
To: Cheatham, John (DEQ); Mackert, Susan (DEQ)
Cc: Kenneth Roller (Services - 6); Randy Markey (Generation - 3); Cathy C Taylor (Services - 6); Glenn P Johnson (Services - 6); Pamela Faggert (Services - 6); Robert C Simpson (Generation - 3)
Subject: Dominion North Anna Power Station: Pump Testing

Dell and Susan,

Dominion is planning to conduct testing of new emergency water pumps at the North Anna Power Station. We are providing information on our proposed activity to get your input on any permitting or notification requirements that may apply.

In response to the 2011 events at the Fukushima, Japan nuclear facility, Dominion is in the process of expanding capabilities to respond to a Beyond Design Basis (BDB) event. A BDB event is a natural disaster that results in damage beyond the design of the station. This effort is being conducted in accordance with NRC requirements. As part of the BDB effort for North Anna (Units 1&2), Dominion is obtaining back-up mobile water pumps. These pumps can be mobilized to provide water to critical safety equipment in the event that offsite power and/or access to the ultimate heat sink was lost. If this occurred, the existing service water pumps would be unavailable. In a BDB event, these pumps could potentially be used to provide water to the reactor vessel, water to the steam generator for cooling the reactor vessel, water for the spent fuel pool and water for spraying the containment structure.

In order to ensure that the pumps are in working order, they must be tested periodically. We are planning to conduct the first test of one of these pumps on December 4th. This is the first test that will occur. We plan to mobilize the pump in the location identified in the attached figure (cove east of discharge canal). Water would be pumped from the lake and immediately re-circulated back into the lake at the same location. The pump, a Godwin HL130M, has a capacity of approximately 1,400 gpm. We will be conducting a pump head test and anticipate running the pump no longer than one hour. The maximum anticipated volume pumped and re-circulated back to the lake is approximately 84,000 gallons. However, our estimate of the actual likely volume pumped is approximately 14,000 gallons.

We anticipate continuing to test this pump on an approximately quarterly basis with a run time of about 30 minutes each event. We anticipate conducting these events from the discharge canal in the future. However, we chose the proposed location for the first test because of ease of moving the equipment to this location for the initial event. There may be other BDB pumps in the future that we will plan to test in a similar fashion.

The questions we have are:

- Considering that the water will be immediately re-circulated through the pump back to the lake, will a VWP permit be required for a withdrawal greater than 10,000 gallons per day?

- If these tests were conducted in the discharge canal, we would like confirmation that no permit would be required.
- The water will not come into contact with any equipment other than the pump. Will we need to take any actions associated with VPDES in order to re-circulate the water directly back to the lake?
- Given the grandfathered status of the water withdrawal for Units 1&2, does Dominion need to obtain a VWP permit for emergency use of these pumps to service safety equipment in the event the existing Unit 1&2 pumps/intake become inoperable as a result of a BDB event?

Please let me know if you would like to have a call to discuss this request.

Thanks,
Jason

Jason P. Ericson, PG
Dominion Resources Services, Inc.
Electric Environmental Services
5000 Dominion Blvd
Glen Allen, VA 23060
Phone: (804) 273-3485
Fax: (804) 273-2964

CONFIDENTIALITY NOTICE: This electronic message contains information which may be legally confidential and/or privileged and does not in any case represent a firm ENERGY COMMODITY bid or offer relating thereto which binds the sender without an additional express written confirmation to that effect. The information is intended solely for the individual or entity named above and access by anyone else is unauthorized. If you are not the intended recipient, any disclosure, copying, distribution, or use of the contents of this information is prohibited and may be unlawful. If you have received this electronic transmission in error, please reply immediately to the sender that you have received the message in error, and delete it. Thank you.



Google earth

feet
meters

1000
400



Mackert, Susan (DEQ)

From: Kenneth Roller (Services - 6) [kenneth.roller@dom.com]
Sent: Monday, January 06, 2014 5:56 PM
To: Mackert, Susan (DEQ)
Subject: Dominion NAPS VPDES Permit Application Addendum 4

Susan,

Here is the second email referenced in Addendum 4 to the NAPS VPDES permit application.

Ken

From: Dooley, Amy (DEQ) [mailto:Amy.Dooley@deq.virginia.gov]
Sent: Tuesday, November 20, 2012 9:48 PM
To: Jason P Ericson (Services - 6)
Cc: Beasley, Trisha (DEQ); Mackert, Susan (DEQ); Marsala, Sarah (DEQ)
Subject: RE: Dominion North Anna Power Station: Pump Testing

Good Evening Jason,

DEQ has reviewed your request email received November 16, 2012. Based on your request and per Regulation 9VAC25-210-60.B, the proposed water withdrawals are excluded from Virginia Water Protection (VWP) permit requirements due to the following:

- Pump testing. Located on a property such that the withdrawal returns to the stream of origin, not more than 1,000 feet of stream channel separate the withdrawal point from the return point, and both banks of the affected stream segment are located within the property boundary (9VAC25-210-60.B.13) and
- Emergency pump use. Used for firefighting activities or training activities related to firefighting activities, such as dry hydrants and emergency surface water withdrawals (9VAC25-210-60.B.9).

However, per State Water Control Board Water Withdrawal Reporting Regulation (9 VAC 25-200 et seq.), the water withdrawal(s) may be required to be reported if the withdrawal(s) average daily withdrawal during any single month exceeds 10,000 gallons per day. If the withdrawal(s) exceed(s) this amount, please provide the following to DEQ, via web based database, by January 31st of the next year:

1. Facility and contact name and address,
2. Sources and locations of water withdrawal,
3. Cumulative volume of water withdrawn each month of the calendar year,
4. Maximum day withdrawal and the month in which it occurred, and
5. Method of withdrawal measurement.

Please note that our determination of the proposed withdrawal's exclusion status does not alleviate the withdrawal user of their responsibility to operate in accordance with State Water Control Law or allow the withdrawal to be operated in a manner that results in adverse impacts to existing beneficial uses.

In regards to the discharge, Ms. Susan Mackert is currently reviewing the proposed action and a response from her should be forthcoming.

Please feel free to contact me if you have any questions.

Respectfully,

Amy Dooley

Department of Environmental Quality
Northern Regional Office
Virginia Water Protection Permit Program
13901 Crown Court
Woodbridge, VA 22193

Phone: 703-583-3905

Fax: 703-583-3821

From: Jason P Ericson [<mailto:jason.p.ericson@dom.com>]

Sent: Friday, November 16, 2012 8:43 AM

To: Beasley, Trisha (DEQ)

Cc: Kenneth Roller

Subject: FW: Dominion North Anna Power Station: Pump Testing

Trisha,

I sent the email below to Dell and received his autoreply that he will be out until the 26th. We are interested in getting DEQ's input on pump testing we would like to do at North Anna the first week of December. Please let me know if there is additional information you would need at this point or if I should send this on to anyone else at DEQ.

I hope all is well with you.

Thanks,
Jason

From: Jason P Ericson (Services - 6)

Sent: Thursday, November 15, 2012 10:17 PM

To: 'Cheatham, John (DEQ)'; 'Mackert, Susan (DEQ)'

Cc: Kenneth Roller (Services - 6); Randy Markey (Generation - 3); Cathy C Taylor (Services - 6); Glenn P Johnson (Services - 6); Pamela Faggert (Services - 6); Robert C Simpson (Generation - 3)

Subject: Dominion North Anna Power Station: Pump Testing

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In response to the 2011 events at the Fukushima, Japan nuclear facility, Dominion is in the process of expanding capabilities to respond to a Beyond Design Basis (BDB) event. A BDB event is a natural disaster that results in damage beyond the design of the station. This effort is being conducted in accordance with NRC requirements. As part of the BDB effort for North Anna (Units 1&2), Dominion is obtaining back-up mobile water pumps. These pumps can be mobilized to provide water to critical safety equipment in the event that offsite power and/or access to the ultimate heat sink was lost. If this occurred, the existing service water pumps would be unavailable. In a BDB event, these pumps could potentially be used to provide water to the reactor vessel, water to the steam generator for cooling the reactor vessel, water for the spent fuel pool and water for spraying the containment structure.

In order to ensure that the pumps are in working order, they must be tested periodically. We are planning to conduct the first test of one of these pumps on December 4th. This is the first test that will occur. We plan to mobilize the pump in the location identified in the attached figure (cove east of discharge canal). Water would be pumped from the lake and immediately re-circulated back into the lake at the same location. The pump, a Godwin HL130M, has a capacity of approximately 1,400 gpm. We will be conducting a pump head test and anticipate running the pump no longer than one hour. The maximum anticipated volume pumped and re-circulated back to the lake is approximately 84,000 gallons. However, our estimate of the actual likely volume pumped is approximately 14,000 gallons.

We anticipate continuing to test this pump on an approximately quarterly basis with a run time of about 30 minutes each event. We anticipate conducting these events from the discharge canal in the future. However, we chose the proposed location for the first test because of ease of moving the equipment to this location for the initial event. There may be other BDB pumps in the future that we will plan to test in a similar fashion.

The questions we have are:

- Considering that the water will be immediately re-circulated through the pump back to the lake, will a VWP permit be required for a withdrawal greater than 10,000 gallons per day?
- If these tests were conducted in the discharge canal, we would like confirmation that no permit would be required.
- The water will not come into contact with any equipment other than the pump. Will we need to take any actions associated with VPDES in order to re-circulate the water directly back to the lake?
- Given the grandfathered status of the water withdrawal for Units 1&2, does Dominion need to obtain a VWP permit for emergency use of these pumps to service safety equipment in the event the existing Unit 1&2 pumps/intake become inoperable as a result of a BDB event?

Please let me know if you would like to have a call to discuss this request.

Thanks,
Jason

Jason P. Ericson, PG
Dominion Resources Services, Inc.
Electric Environmental Services
5000 Dominion Blvd
Glen Allen, VA 23060
Phone: (804) 273-3485
Fax: (804) 273-2964

CONFIDENTIALITY NOTICE: This electronic message contains information which may be legally confidential and/or privileged and does not in any case represent a firm ENERGY COMMODITY bid or offer relating thereto which binds the sender without an additional express written confirmation to that effect. The information is intended solely for the individual or entity named above and access by anyone else is unauthorized. If you are not the intended recipient, any disclosure, copying, distribution, or use of the contents of this information is prohibited and may be unlawful. If you have received this electronic transmission in error, please reply immediately to the sender that you have received the message in error, and delete it. Thank you.



October 31, 2013

BY U.S. MAIL
RETURN RECEIPT REQUESTED



Ms. Susan Mackert
Department of Environmental Quality
Northern Regional Office
13901 Crown Court
Woodbridge, VA 22193

RE: Dominion North Anna Power Station; VPDES Permit No. VA0052451
Reissuance Application Addendum #3

Dear Ms. Mackert:

Virginia Electric and Power Company (Dominion) submitted an application for the renewal of VPDES Permit No. VA0052451 for the North Anna Power Station to DEQ on April 9, 2013. Addendum #1 to the application was submitted on July 5, 2013 and Addendum #2 was submitted on July 30, 2013. With this transmittal, we are submitting the attached Addendum #3 to the application to incorporate a new stormwater outfall, Outfall 027, into the permit. Attached are revised Form 2F pages, a revised outfall location map and a revised site drainage map.

Outfall 27 drains an area that includes a portion of the warehouse and storage facilities, hazardous waste storage building, roadway and a fueling area. The area drains to a stormwater retention pond. The stormwater pond discharges over a riprap outfall to a drainage that discharges to the Waste Heat Treatment Facility. Materials are kept under cover with the exception of the fueling area. Stormwater from the fueling area is directed through an oil water separator prior to entering the stormwater pond.

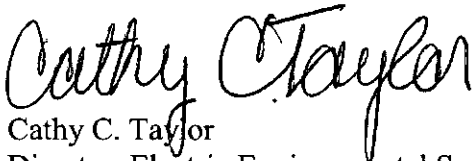
The stormwater pond and other facilities within the drainage of Outfall 027 were constructed as part the North Anna Site Separation project that is currently underway. The Construction SWPPP for this project is referenced in Appendix H of the SWPPP for the North Anna Power Station. Site Separation activities are not currently complete. We request approval to submit monitoring data for Form 2F Part VII within three years of the permit's effective date.

Ms. Susan Mackert

Page 2

Should you have any questions and/or require additional information, please contact Jason Ericson at 804-273-3485 or via email at jason.p.ericson@dom.com.

Sincerely,

A handwritten signature in black ink that reads "Cathy C. Taylor". The signature is written in a cursive, flowing style.

Cathy C. Taylor
Director, Electric Environmental Services

Enclosure

Please print or type in the unshaded areas

EPA ID Number (copy from item I of Form 1)
110001891114Form Approved. OMB No. 2040-0086
Approval expires 5-31-92Form
2F
NPDESUnited States Environmental Protection Agency
Washington, DC 20460**Application for Permit to Discharge Storm Water
Discharges Associated with Industrial Activity****Paperwork Reduction Act Notice**

Public reporting burden for this application is estimated to average 28.6 hours per application, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate, any other aspect of this collection of information or suggestions for improving this form, including suggestions which may increase or reduce this burden to: Chief, Information Policy Branch, PM-223, U.S. Environmental Protection Agency, 401 M St., SW, Washington, DC 20460, or Director, Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, DC 20503.

I. Outfall Location

For each outfall, list the latitude and longitude of its location to the nearest 15 seconds and the name of the receiving water.

A. Outfall Number (list)	B. Latitude			C. Longitude			D. Receiving Water (name)
014	38	03	42.7	-77	47	28.6	Lake Anna
022	38	03	52.5	-77	47	52.8	Lake Anna
024	38	03	55.2	-77	47	38.4	Lake Anna
025	38	03	16.5	-77	47	27.2	Waste Heat Treatment Facility to Lake Anna
027	38	03	11.6	-77	47	21.7	Waste Heat Treatment Facility to Lake Anna

II. Improvements

A. Are you now required by any Federal, State, or local authority to meet any implementation schedule for the construction, upgrading or operation of wastewater treatment equipment or practices or any other environmental programs which may affect the discharges described in this application? This includes, but is not limited to, permit conditions, administrative or enforcement orders, enforcement compliance schedule letters, stipulations, court orders, and grant or loan conditions.

1. Identification of Conditions, Agreements, Etc.	2. Affected Outfalls		3. Brief Description of Project	4. Final Compliance Date	
	number	source of discharge		a. req.	b. proj.
NA					

B. You may attach additional sheets describing any additional water pollution (or other environmental projects which may affect your discharges) you now have under way or which you plan. Indicate whether each program is now under way or planned, and indicate your actual or planned schedules for construction.

III. Site Drainage Map

See Attachment E.

Continued from the Front

IV. Narrative Description of Pollutant Sources

A. For each outfall, provide an estimate of the area (include units) of impervious surfaces (including paved areas and building roofs) drained to the outfall, and an estimate of the total surface area drained by the outfall.

Outfall Number	Area of Impervious Surface (provide units)	Total Area Drained (provide units)	Outfall Number	Area of Impervious Surface (provide units)	Total Area Drained (provide units)
014	1.5 acres	2 acres	024	0.08 acre	9 acres
022	7.1 acres	52 acres	025	30 acres	56 acres
			027	1.3 acres	4.0 acres

B. Provide a narrative description of significant materials that are currently or in the past three years have been treated, stored or disposed in a manner to allow exposure to storm water; method of treatment, storage, or disposal; past and present materials management practices employed to minimize contact by these materials with storm water runoff; materials loading and access areas; and the location, manner, and frequency in which pesticides, herbicides, soil conditioners, and fertilizers are applied.

For Outfalls 014, 022, 024 and 025, see **Attachment F**.


Outfall 027: Outfall 27 drains an area approximately 4.0 acres, with approximately 1.3 of acres being impervious. This area includes a portion of the warehouse and storage facilities, hazardous waste storage building, roadway and a fueling area. The area drains to a stormwater retention pond. The stormwater pond discharges over a riprap outfall to a drainage that discharges to the Waste Heat Treatment Facility. Materials are kept under cover with the exception of the fueling area. Stormwater from the fueling area is directed through an oil water separator prior to entering the stormwater pond. The stormwater pond and other facilities within the drainage of Outfall 027 were constructed as part the North Anna Site Separation project that is currently underway.

C. For each outfall, provide the location and a description of existing structural and nonstructural control measures to reduce pollutants in storm water runoff; and a description of the treatment the storm water receives, including the schedule and type of maintenance for control and treatment measures and the ultimate disposal of any solid or fluid wastes other than by discharge.

Outfall Number	Treatment	List Codes from Table 2F-1
014,022, 024,025	See Attachment F .	1-O (Outfall 025) 4-A (all outfalls)
027	Outfall 027 drains to a stormwater retention pond. The stormwater pond discharges over a riprap outfall to a drainage that discharges to the Waste Heat Treatment Facility. Materials are kept under cover with the exception of the fueling area. Stormwater from the fueling area is directed through an oil water separator prior to entering the stormwater pond.	4-A 1-U

V. Non Stormwater Discharges

A. I certify under penalty of law that the outfall(s) covered by this application have been tested or evaluated for the presence of non-stormwater discharges, and that all non-stormwater discharges from these outfall(s) are identified in either an accompanying Form 2C or Form 2E application for the outfall.

Name of Official Title (<i>type or print</i>) Daniel G. Stoddard, Senior VP Nuclear Operations	Signature 	Date Signed 10/30/2013
---	--	---------------------------

B. Provide a description of the method used, the date of any testing, and the onsite drainage points that were directly observed during a test.

Dry Weather Evaluations for Outfalls 014, 022, 024 and 025 were conducted with the Annual Comprehensive Site Compliance Evaluation on the following date 08/20/2008. Outfall 022 was observed to have flow and was sampled and analyzed in October and November, respectively, in 2008. A copy of the documentation can be found at the end of **Attachment F**.

Outfall 027 is a new outfall. The drainage area for Outfall 027 was evaluated for the presence of non-stormwater discharges on October 10, 2013 and none were identified. A Dry Weather Evaluation for Outfall 027 will be incorporated into future Annual Comprehensive Site Compliance Evaluations.

VI. Significant Leaks or Spills

Provide existing information regarding the history of significant leaks or spills of toxic or hazardous pollutants at the facility in the last three years, including the approximate date and location of the spill or leak, and the type and amount of material released.

None.

VII. Discharge Information

A,B,C, & D: See instruction before proceeding. Complete one set of tables for each outfall. Annotate the outfall number in the space provided. Tables VII-A, VII-B, and VII-C are included on separate sheets numbered VII-1 and VII-2.

E. Potential discharges not covered by analysis - is any toxic pollutant listed in table 2F-2, 2F-3, or 2F-4, a substance or a component of a substance which you currently use or manufacture as an intermediate or final product or byproduct?

☒ Yes (list all such pollutants below)

☐ No (go to Section IX)

As radioactive releases at this facility are regulated by the Nuclear Regulatory Commission (NRC), they have not been listed here. See Attachment C for a list of other potential discharges not covered by analysis.

VIII. Biological Toxicity Testing Data

Do you have any knowledge or reason to believe that any biological test for acute or chronic toxicity has been made on any of your discharges or on a receiving water in relation to your discharge within the last 3 years?

☐ Yes (list all such pollutants below)

☒ No (go to Section IX)

IX. Contact analysis Information

Were any of the analysis reported in item VII performed by a contact laboratory or consulting firm?

☒ Yes (list the name, address, and telephone number of, and pollutants analyzed by, each such laboratory or firm below)

☐ No (go to Section X)

A. Name	B. Address	C. Area Code & Phone No.	D. Pollutants Analyzed
Primary Laboratories Inc.	7423 Lee Davis Rd., Mechanicsville, VA 23111	(804) 559-9004	See Attachment D

X. Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

A. Name & Official Title (type or print)
Daniel G. Stoddard, Senior VP Nuclear Operations

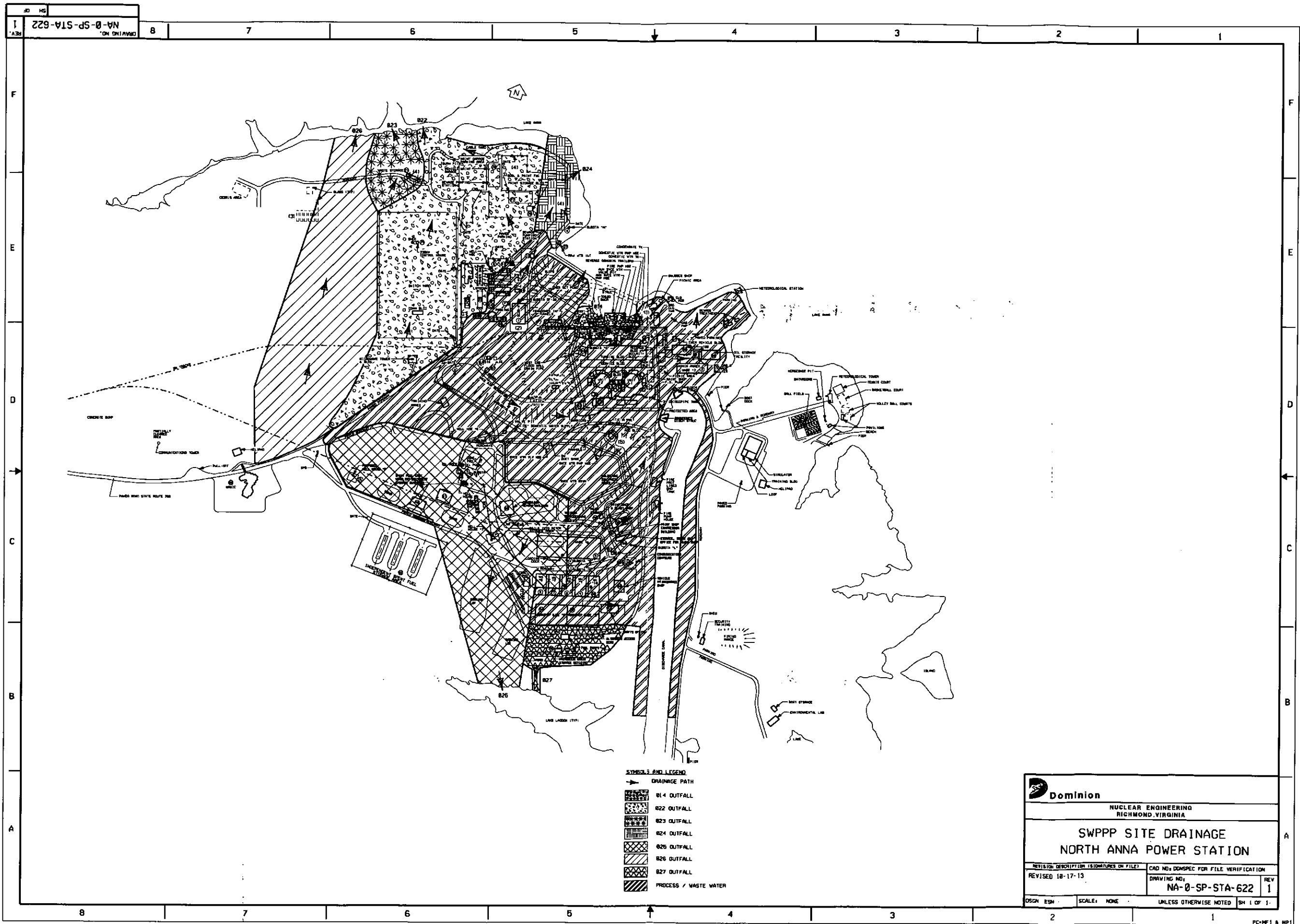
B. Area Code and Phone No.
804-273-4390

C. Signature

Dan Stoddard

D. Date Signed

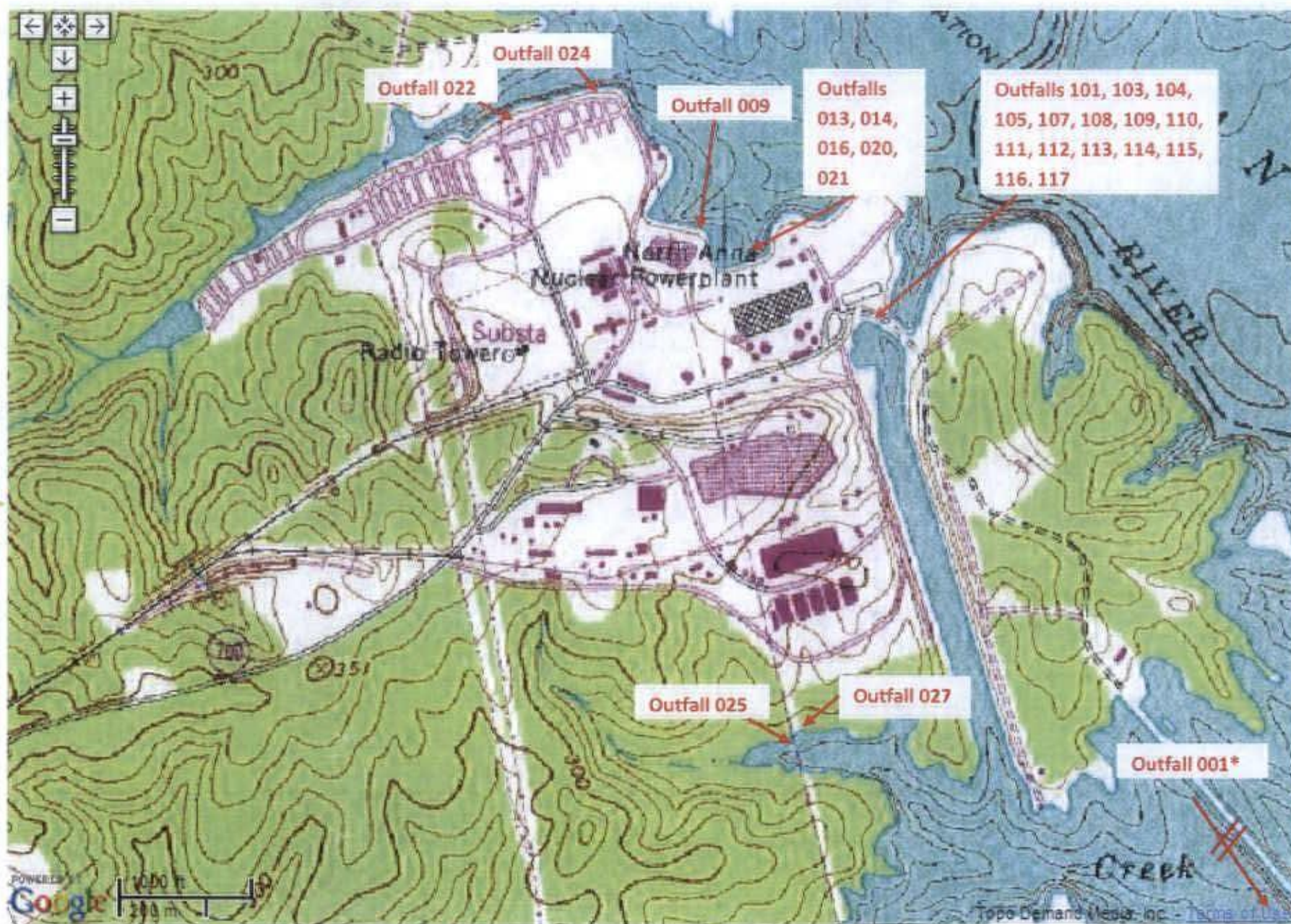
10/30/2013



- SYMBOLS AND LEGEND**
- DRAINAGE PATH
 - [Symbol] B14 OUTFALL
 - [Symbol] B22 OUTFALL
 - [Symbol] B23 OUTFALL
 - [Symbol] B24 OUTFALL
 - [Symbol] B26 OUTFALL
 - [Symbol] B26 OUTFALL
 - [Symbol] B27 OUTFALL
 - [Symbol] PROCESS / WASTE WATER

Dominion	
NUCLEAR ENGINEERING RICHMOND, VIRGINIA	
SWPPP SITE DRAINAGE NORTH ANNA POWER STATION	
REVISION DESCRIPTION (SIGNATURES ON FILE)	
REVISED 10-17-13	CAD NO: CONSPEC FOR FILE VERIFICATION
DRAWING NO: NA-0-SP-STA-622	REV 1
OSGN ESH	SCALE: NONE
UNLESS OTHERWISE NOTED SH 1 OF 1	

USER:NA000000
SYTIME:0000000000
CONSPEC FOR FILE VERIFICATION



*Outfall 001 is down-lake, off the WHTF Lagoon 3 dam as depicted on URS topographic map (also included in this Attachment).

Dominion Resources Services, Inc.
5000 Dominion Boulevard, Glen Allen, VA 23060
Web Address: www.dom.com



July 30, 2013

BY U.S. MAIL
RETURN RECEIPT REQUESTED



Ms. Susan Mackert
Department of Environmental Quality
Northern Regional Office
13901 Crown Court
Woodbridge, VA 22193

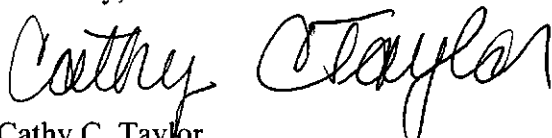
RE: Dominion North Anna Power Station; VPDES Permit No. VA0052451
Reissuance Application Addendum #2

Dear Ms. Mackert:

Our application for the renewal of VPDES Permit No. VA0052451 for the North Anna Power Station was submitted to DEQ on April 9, 2013. Addendum #1 to the application was submitted on July 15, 2013. With this transmittal, we are submitting the attached Addendum #2 to the application to recognize our plans to relocate a portion of the wastewater currently discharged through Outfall 009 to the existing Outfall 020.

Should you have any questions and/or require additional information, please contact Jason Ericson at 804-273-3485 or via email at jason.p.ericson@dom.com.

Sincerely,


Cathy C. Taylor
Director, Electric Environmental Services

Enclosure

North Anna Power Station VPDES Permit Application Addendum #2

The North Anna Power Station's reverse osmosis (RO) system purifies water withdrawn from Lake Anna for use in critical station processes. There are several steps involved with the water purification process including, in sequence: 1) initial filtration using multimedia (MM) filters, 2) filtration through granulated activated carbon (GAC), and 3) polishing with reverse osmosis. The MM and GAC filter backwash wastewaters (approximately 0.50 million gallons per day (mgd)) are currently directed to a settling pond where they mix with stormwater prior to being discharged to Lake Anna through Outfall 009. The electrodeionization (EDI) system is a water treatment system associated with the RO system. The EDI polishes product water following treatment by the RO Units. Water used by the EDI system for cooling and removal of constituents filtered out of the product water is blown down at approximately 0.07 mgd. The EDI system wastewater mixes with the RO filter backwashes and is discharged through the RO backwash discharge pipe to the settling pond.

Should Dominion decide to move forward with North Anna Unit 3, the construction and operation of the associated intake structure will require the relocation of the Units 1 and 2 RO filter backwash discharge. Consequently, Dominion plans to install the new discharge piping as part of Site Separation, a process currently underway to physically separate Units 1 and 2 from the proposed Unit 3. The RO filter backwash will be directed to the existing RO reject stream and the combined flow discharged through the existing Outfall 020. Outfall 020 currently discharges about 0.216 mgd to Lake Anna approximately 25 feet from the Units 1 and 2 intake structures.

Construction of the infrastructure to allow the relocation of the RO backwash discharge is planned for 2013. Infrastructure to allow the relocation will include new piping and systems to prevent discharge of filter bed material. Initial testing of the new infrastructure is planned for 2013. We will be seeking DEQ's permission to conduct this testing through a separate submittal. However, the initiation of permanent utilization of the new discharge piping and discharge of the RO backwash through Outfall 020 will not occur until the initiation of the construction of Unit 3. In the event Dominion decides to build Unit 3, initiation of the construction of Unit 3 will occur following receipt of a certificate of public convenience and necessity from the Virginia State Corporation Commission. Discharge of RO backwash through Outfall 009 will continue until initiation of the construction of Unit 3.

Attached are revised EPA Form 2C pages and a revised process line diagram, which have been modified to recognize the relocated RO filter backwash discharge. Additional information concerning studies undertaken to determine the chemical characteristics of this waste stream are provided below. It should be noted that the chemical data provided are for the existing RO backwash and do not recognize that this waste stream will be mixed with the RO reject waste stream prior to discharge through Outfall 020.

We are requesting that the following be incorporated into the reissued permit:

- Authorization to continue to discharge the RO backwash to the settling ponds and out Outfall 009 until Unit 3 construction is initiated

- Authorization to discharge the RO backwash to the existing RO reject stream and discharge the combined wastewater through Outfall 020 on a temporary basis during testing of the new infrastructure prior to initiation of construction of Unit 3
- Authorization to discharge the RO backwash to the existing RO reject stream and discharge the combined wastewater through Outfall 020 on a permanent basis following initiation of the construction of Unit 3
- Use of a grab or 24-hour composite sample for demonstrating compliance with total suspended solids (TSS) limits for Outfall 020


Chemical Analyses of RO Filter Backwash

The RO filter backwash includes backwash from the multi-media (MM) filters and the granulated activated carbon (GAC) filters. The MM filters backwash for approximately 22 hours per day. Each of the five MM filters is backwashed individually for about 45 minutes, one at a time in sequence. The GAC filters are backwashed approximately every two weeks for several hours. Dominion conducted a series of sampling events in February 2013, both grab and 24-hour composite, to characterize the two RO backwashes. As EDI discharge is coincident with the RO filter backwash, this sampling also captured the EDI water discharge. Samples were analyzed for applicable EPA Form 2C and water quality standard parameters. Attached is a table identifying all the parameters detected during the February sampling of the RO backwash discharge and associated laboratory data sheets. The results labeled *MM 24-hour composite* were collected during a 24-hour period when only the MM filters were backwashed. The results labeled *GAC 24-hour composite* were collected during a 24-hour period that incorporated both the regular MM backwash and a GAC backwash event. It should be noted that the primary source for those pollutants detected in the wastewater is the Lake Anna make-up water.

Attachment A: EPA Form 2C Pages

Please type or print in the unshaded areas only

EPA ID Number (Copy from Item 1 of Form 1)
110001891114Form Approved
OMB No. 2040-0086
Approval expires 3-31-98

Form 2C NPDES				U.S. ENVIRONMENTAL PROTECTION AGENCY APPLICATION FOR PERMIT TO DISCHARGE WASTEWATER EXISTING MANUFACTURING, COMMERCIAL, MINING AND SILVICUTLRAL OPERATIONS Consolidated Permits Program			
I. Outfall Location							
For this outfall, list the latitude and longitude of its location to the nearest 15 seconds and name of the receiving water.							
Outfall Number (list)	Latitude			Longitude			Receiving Water (name)
	Deg	Min	Sec	Deg	Min	Sec	
001	38	00	30.2	-77	43	43	Lake Anna
101	38	03	5.8	-77	47	3.1	Discharge Canal to Waste Heat Treatment Facility to Lake Anna
103	38	03	5.8	-77	47	3.1	Discharge Canal to Waste Heat Treatment Facility to Lake Anna
104	38	03	5.8	-77	47	3.1	Discharge Canal to Waste Heat Treatment Facility to Lake Anna
105	38	03	5.8	-77	47	3.1	Discharge Canal to Waste Heat Treatment Facility to Lake Anna
107	38	03	5.8	-77	47	3.1	Discharge Canal to Waste Heat Treatment Facility to Lake Anna
108	38	03	5.8	-77	47	3.1	Discharge Canal to Waste Heat Treatment Facility to Lake Anna
109	38	03	5.8	-77	47	3.1	Discharge Canal to Waste Heat Treatment Facility to Lake Anna
110	38	03	5.8	-77	47	3.1	Discharge Canal to Waste Heat Treatment Facility to Lake Anna
111	38	03	46	-77	47	13.4	Discharge Canal to Waste Heat Treatment Facility to Lake Anna
112	38	03	5.8	-77	47	3.1	Discharge Canal to Waste Heat Treatment Facility to Lake Anna
113	38	03	5.8	-77	47	3.1	Discharge Canal to Waste Heat Treatment Facility to Lake Anna
114	38	03	5.8	-77	47	3.1	Discharge Canal to Waste Heat Treatment Facility to Lake Anna
115	38	03	5.8	-77	47	3.1	Discharge Canal to Waste Heat Treatment Facility to Lake Anna
116	38	03	5.8	-77	47	3.1	Discharge Canal to Waste Heat Treatment Facility to Lake Anna
117	38	03	5.8	-77	47	3.1	Discharge Canal to Waste Heat Treatment Facility to Lake Anna
009	38	03	43.6	-77	47	31	Lake Anna
013	38	03	43.6	-77	47	24.4	Lake Anna
016	38	03	43.6	-77	47	24.4	Lake Anna
020	38	03	43.6	-77	47	24.4	Lake Anna
021	38	03	43.6	-77	47	24.4	Lake Anna
II. Flows, Sources of Pollution, and Treatment Technologies							

<p>A. Attach a line drawing showing the water flow through the facility. Indicate sources of intake water, operations contributing wastewater to effluent, and treatment units labeled to correspond to the more detailed descriptions in Item B. Construct a water balance on the line drawing by showing average flows between intakes, operations, treatment units, and outfalls. If a water balance cannot be determined (e.g. for certain mining activities), provide a pictorial description of the nature and amount of any sources of water and any collection or treatment measures. See Attachment B.</p>					
<p>B. For each outfall, provide a description of (1) all operations contributing wastewater to the effluent, including process wastewater, sanitary wastewater, cooling water, and stormwater runoff; (2) the average flow contributed by each operation; and (3) the treatment received by the wastewater. Continue on additional sheets if necessary.</p>					
1. Outfall Number	2. Operations Contributing Flow		3. Treatment		
	a. OPERATION (<i>list</i>)	b. AVERAGE FLOW	a. DESCRIPTION	b. LIST CODES FROM TABLE 2C-1	
001	Discharges from the Waste Heat Treatment Facility (WHTF), which includes internal outfalls, at Dike 3	2335.8 MGD	Discharge to Lake Anna	4-A	
101	Condenser cooling water	1838.8 MGD	Discharge to discharge canal	1-O	
103	Process wastewater clarifier, including flow from the liquid radioactive waste management system Steam generator blowdown Package boiler blowdown Mat sump system Ion exchange waste Service water system high capacity blowdown (intermittent)	0.312 MGD	Ion exchange; discharge to discharge canal	2-J	1-O
104	Turbine building sumps 1, 2, & 3 Storm water Fire water system line drains Misc. discharges of purified or raw lake water from various infrequent plant maintenance activities Chiller water Service water Condensate Storage Tanks AST Containment Sump Demineralizer Sump Plant condensers Bearing cooling water Temporary package boiler blowdown	0.288 MGD	O/W separator; discharge to discharge canal Neutralization	1-H 2-K	1-O
105	Bearing cooling tower blowdown - Continuous blowdown - Lake to lake operation (intermittent)	0.084 MGD	Discharge to discharge canal	1-O	
107	Bearing cooling tower blowdown - Continuous blowdown - Lake to lake operation (intermittent) Strainer blowdown	Intermittent (has not discharge during 2008-2010 time period)	Discharge to discharge canal	1-O	
108	Service water overboard Batch blowdown overflow Straight-through cooling water Header maintenance	Intermittent (0.15 MGD for the 2008-2010 time period)	Discharge to discharge canal	1-O	
109	Hot well drain – Unit 1 Secondary system condensate	Intermittent (1.152 MGD for the 2008-2010 time period)	Discharge to discharge canal	1-O	
110	Hot well drain – Unit 2 Secondary system condensate	Intermittent (0.137 MGD for the 2008-2010 time period)	Discharge to discharge canal	1-O	
111	Unit 1 & 2 STP	0.03 MGD design daily avg flow 0.0058 MGD daily avg flow	See EPA Form 2A; Discharge to discharge canal	1-T, 1-L, XX, 3-A, 5-A, 1-U, 2-F	1-O
112	Steam generator blowdown – Unit 1	0.204 MGD	Discharge to discharge canal	1-O	
113	Steam generator blowdown – Unit 2	0.204 MGD	Discharge to discharge canal	1-O	
114	Service water tie-on vault drain	Intermittent (0.0002 MGD for the 2008-2010 time period)	Discharge to discharge canal	1-O	

115	Service water system high capacity blowdown	Intermittent (has not discharge during 2008-2010 time period)	Discharge to discharge canal	1-O	
116	Vacuum priming pump	0.058 MGD	Discharge to discharge canal	1-O	
117	Salt storage pond	Intermittent (has not previously discharged)	Discharge to discharge canal	1-U 1-O	
009	Settling pond: Groundwater; storm water; RO unit backwash; Bearing cooling tower water during maintenance activities; Ionics emergency shower wash post neutralization in holding tank	0.576 MGD	Sedimentation; Discharge to Lake Anna	1-U, 4-A	
013	Turbine building sumps #1 and #2 Stormwater Plant condensers Bearing cooling water Misc. discharges of purified or raw lake water from various infrequent plant maintenance activities	Intermittent (0.324 MGD for the 2008- 2010 time period)	Discharge to Lake Anna	4-A	
016	Intake screen wash water	3.744 MGD	Discharge to Lake Anna	4-A	
020	Reverse Osmosis (RO) reject RO unit backwash (*beginning with Unit 3 construction)	0.216 MGD (RO reject only) 0.716 MGD (*including RO reject and RO backwash)	Discharge to Lake Anna	4-A	
021	RO drain line	Intermittent (has not discharge during 2008-2010 time period)	Discharge to Lake Anna	4-A	

CONTINUED FROM THE FRONT

C. Except for storm runoff, leaks, or spills, are any of the discharges described in Items II-A or B intermittent or seasonal?

☒ **YES** (complete the following table)

☐ **NO** (go to Section III)

1. OUTFALL NUMBER (list)	2. OPERATION(s) CONTRIBUTING FLOW (list)	3. FREQUENCY		4. FLOW				c. DUR- ATION (in days)
		a. DAYS PER WEEK (specify average)	b. MONTHS PER YEAR (specify average)	a. FLOW RATE (in mgd)		b. TOTAL VOLUME (specify with units)		
				1. LONG TERM AVERAGE	2. MAXIMUM DAILY	1. LONG TERM AVERAGE	2. MAXIMUM DAILY	
107	Bearing cooling tower blowdown - Continuous blowdown - Lake to lake operation (intermittent) Strainer blowdown	Varies	Varies	No discharge during 2008-2010 time period				n/a
108	Service water overboard Batch blowdown overflow Straight-through cooling water Header maintenance	Varies	Varies	0.15 MGD	0.15 MGD	0.15 MG	0.15 MG	1
109	Hot well drain – Unit 1 Secondary system condensate	1/ outage	1/ 18 months	1.152 MGD	1.152 MGD	1.152 MG	1.152 MG	1
110	Hot well drain – Unit 2 Secondary system condensate	1/ outage	1/ 18 months	0.137 MGD	0.137 MGD	0.137 MGD	0.137 MGD	1
114	Service water tie-in vault drain	Varies	Varies	0.0002 MGD	0.0002 MGD	0.0002 MG	0.0002 MG	1
115	Service water system high capacity blowdown	Varies	Varies	No discharge during 2008-2010 time period				n/a
117	Salt storage pond	Varies	Varies	No discharge to date; <XXXXXX MGD				n/a
013	Turbine building sumps #1 and #2; stormwater	Varies	Varies	0.324 MGD	0.324 MGD	0.324 MG	0.324 MG	1
021	RO drain line	Varies	Varies	No discharge during 2008-2010 time period				n/a

III. PRODUCTION

A. Does an effluent guideline limitation promulgated by EPA under Section 304 of the Clean Water Act apply to your facility?

☒ **YES** (complete Item III-B)

☐ **NO** (go to Section IV)

B. Are the limitations in the applicable effluent guideline expressed in terms of production (or other measure of operation)?

☐ **YES** (complete Item III-C)

☒ **NO** (go to Section IV)

C. If you answered "yes" to Item III-B, list the quantity which represents an actual measurement of your level of production, expressed in the terms and units used in the applicable effluent guideline, and indicate the affected outfalls.

1. AVERAGE DAILY PRODUCTION			2. AFFECTED OUTFALLS (list outfall numbers)
a. QUANTITY PER DAY	b. UNITS OF MEASURE	c. OPERATION, PRODUCT, MATERIAL, ETC. (specify)	
N/A			

IV. IMPROVEMENTS

A. Are you now required by any Federal, State, or local authority to meet any implementation schedule for the construction, upgrading, or operation of wastewater treatment equipment or practices or any other environmental programs which may affect the discharges described in this application? This includes, but is not limited to, permit conditions, administrative or enforcement orders, enforcement compliance schedule letters, stipulations, court orders, and grant or loan conditions.

☐ **YES** (complete the following table)

☒ **NO** (go to Item IV-B)

1. IDENTIFICATION OF CONDITION, AGREEMENT, ETC.	2. AFFECTED OUTFALLS		3. BRIEF DESCRIPTION OF PROJECT	4. FINAL COMPLIANCE DATE	
	a. No	b. SOURCE OF DISCHARGE		a. REQ- UIRED	b. PRO- JECTED
N/A					

B. OPTIONAL: You may attach additional sheets describing any additional water pollution control programs (or other environmental projects which may affect your discharges) you now have underway or which you plan. Indicate whether each program is now underway or planned, and indicate your actual or planned schedules for construction.

☐ **MARK "X" IF DESCRIPTION OF ADDITIONAL CONTROL PROGRAM IS ATTACHED**

V. INTAKE AND EFFLUENT CHARACTERISTICS

NOTE: Tables V-A, V-B, and V-C are included on separate sheets number V-1 through V-9.

[illegible]

Is any pollutant listed in Item V-C a substance or a component of a substance which you currently use or manufacture as an intermediate or final product or byproduct?

☐ **NO** (go to Item VI-B)

As radioactive releases at this facility are regulated by the Nuclear Regulatory Commission (NRC), they have not been listed here. See **Attachment C** for a list of other potential discharges not covered by analysis.

CONTINUED FROM THE FRONT

VII. BIOLOGICAL TOXICITY TESTING DATA

Do you have any knowledge or reason to believe that any biological test for acute or chronic toxicity has been made on any of your discharges or on a receiving water in relation to your discharge within the last 3 years?

☒ **YES** (identify the test(s) and describe their purpose below)

☐ **NO** (go to Section VIII)

Toxicity testing and reporting have been conducted in accordance with the requirements of Part I.C.1 of the VPDES permit. For outfall 001, the permit requires chronic 3-brood static renewal survival and reproduction tests with *Ceriodaphnia dubia* and chronic 7-day static renewal survival and growth tests with *Pimephales promelas*. A summary of the test results from 2008 – 2011 are below.

Year	<i>C. dubia</i>		<i>P. promelas</i>	
	NOEC Survival	NOEC Reproduction	NOEC Survival	NOEC Growth
April 2008	100%	100%	100%	100%
April 2009	100%	100%	100%	100%
April 2010	100%	100%	100%	25%
October 2010 ⁽¹⁾	-	-	100%	50%
October 2010 ⁽²⁾	-	-	100%	100%
April 2011	100%	100%	100%	100%

(1) Using Synthetic Freshwater

(2) Using softened Synthetic Freshwater

VIII. CONTRACT ANALYSIS INFORMATION

Were any of the analyses reported in Item V performed by a contract laboratory or consulting firm?

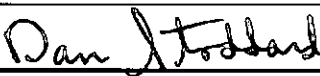
☒ **YES** (list the name, address, and telephone number of, and pollutants analyzed by, each such laboratory or firm below)

☐ **NO** (go to Section IX)

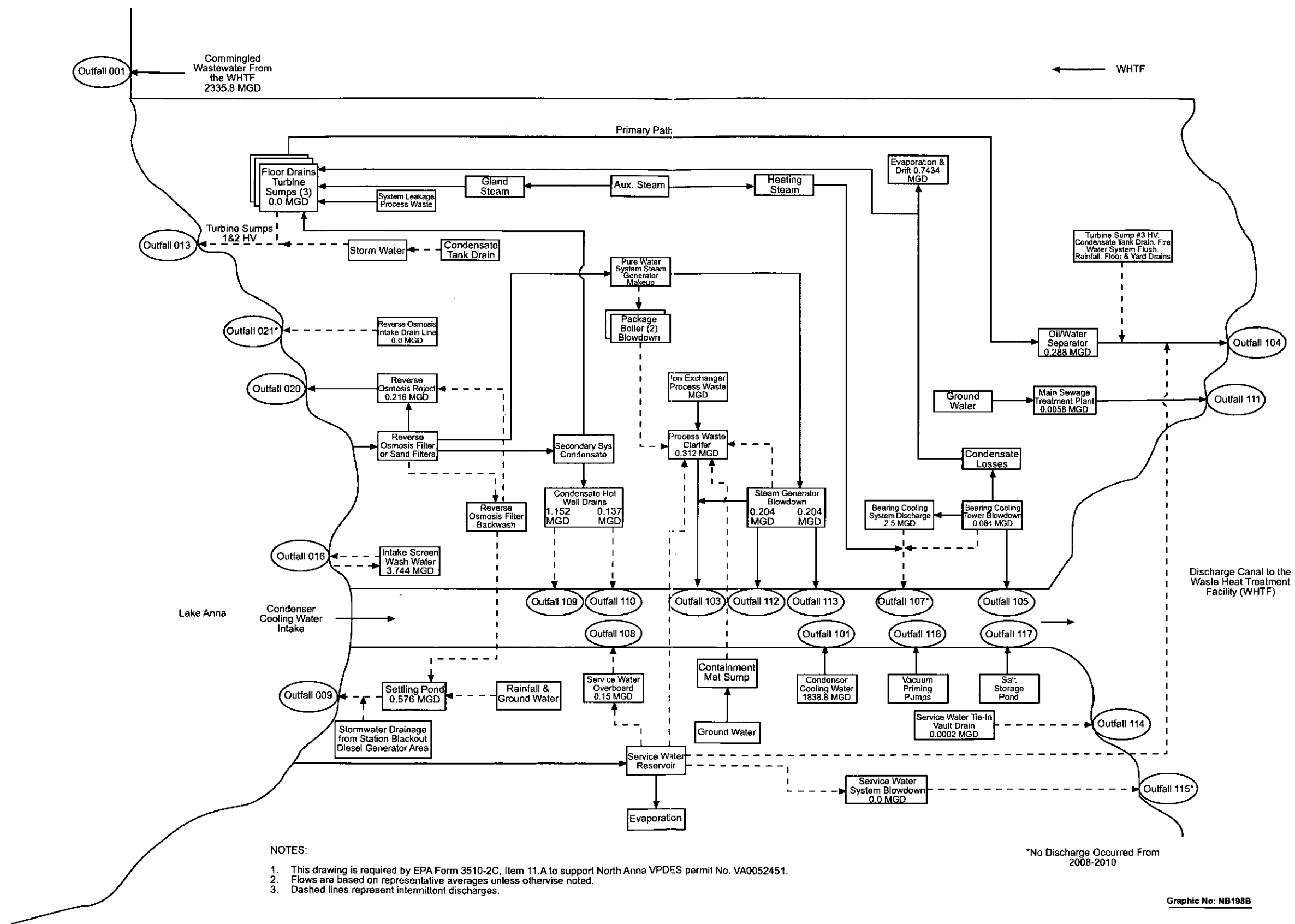
A. NAME	B. ADDRESS	C. TELEPHONE (area code & no.)	D. POLLUTANTS ANALYZED (list)
Primary Laboratories Inc.	7423 Lee Davis Rd., Mechanicsville, VA 23111	(804) 559-9004	See Attachment D
Pace Analytical	1638 Roseytown Rd., Greensburg, PA 15601	(724) 850-5600	See Attachment D
		()	
		()	
		()	
		()	

IX. CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

A. NAME & OFFICIAL TITLE (type or print) Daniel G. Stoddard, Senior VP Nuclear Operations	B. PHONE NO. (area code & no.) (804) 273-4390
C. SIGNATURE 	D. DATE SIGNED 07/30/2013

Attachment B: Process Line Diagram



Attachment C: RO Filter Backwash Sampling Results

Dominion North Anna: RO Backwash Detected Parameters

Metal (ug/L)*	2/7/13 MM Grab	2/7/13 MM 24 hr Comp	2/26/13 GAC 24 hr Comp	2/26/13 MM Grab	2/26/13 GAC Grab 1	2/26/13 GAC Grab 2	2/27/13 GAC 24 hr Comp	2/27/13 MM Grab
Oil & Grease (mg/L)	ND	NS	NS	8.4	5.2	ND	NS	NS
TSS (mg/L)	NS	17.2	15.2	5.2	67.6	308	15.6	10
Al	90	2240	1920	1050	6110	4810	2140	440
Ba	7	9	<20	<20	<20	<20	<20	<20
Cd	ND	ND	1	ND	ND	ND	ND	ND
Cu	1	3	7	5	11	9	6	5
Fe	ND	660	352	159	781	581	347	61
Mg	2340	2150	ND	ND	ND	ND	ND	ND
Mn	40	70	54	34	186	86	45	21
Mo	6	7	76	51	46	32	29	28
Ni	ND	ND	8	5	ND	11	9	7
Pb	ND	ND	7	ND	ND	ND	ND	1
Th	ND	ND	6	ND	ND	ND	ND	ND
Zinc	ND	11	ND	ND	ND	ND	ND	ND
Al, dissolved	ND	NS	NS	54	ND	ND	NS	52
Cu, dissolved	ND	NS	NS	4	4	4	NS	4
Mo, dissolved	6	NS	NS	41	33	36	NS	26
Ni, dissolved	ND	NS	NS	ND	ND	8	NS	7
Ba, dissolved	7	NS	NS	<20	<20	<20	NS	ND
Mn, dissolved	30	NS	NS	ND	ND	<20	NS	ND
TDS (mg/L)	NS	46.5	80	56	62	66	68	70
Hardness (mg/L)	22.23	23.94	17.3	14.4	22.1	NS	NS	NS
Ammonia	NS	80	50	NS	70	NS	NS	NS
Boron	NS	70	200	NS	NS	NS	NS	NS
COD (mg/L)	NS	8	18	NS	32	NS	NS	NS
Fluoride	NS	56	410	150	33	210	170	130
Chloride (mg/L)	NS	8.89	8.4	8.9	6.5	11.7	11.2	14
Nitrate Nitrite	NS	110	180	110	130	120	110	90
Nitrate	NS	110	180	110	130	120	110	90
Sulfate (mg/L)	NS	7.57	7.7	8.8	9.6	11.4	7.9	8
TKN	NS	380	580	NS	960	NS	NS	NS
TOC	NS	4700	ND	NS	ND	NS	NS	NS
Total Phosphorus	NS	40	30	NS	100	NS	NS	NS
Bromide	NS	170	200	NS	NS	NS	110	NS
Color (PCU)	NS	8	8	NS	NS	NS	NS	NS
Ethylbenzene	ND	ND	8	NS	ND	NS	NS	NS
Toluene	8	ND	11.7	NS	ND	NS	NS	NS
Fecal Coli. (MPN/100ml)	ND	NS	NS	NS	2	NS	NS	NS

*	All concentrations in ug/L unless otherwise noted
MM	Multimedia Filters
GAC	Granulated Activated Carbon Filters
ND	Non-detect
NS	Not sampled

Field Parameters taken February 7, 2013

Temperature 7.6 C
 pH 6.45
 TRC <QL
 Sulfite 0.64 mg/L

Attachment D: RO Filter Backwash Sampling Laboratory Data Sheets

DOMINION LABORATORY SERVICES
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REPORT PRODUCED ON 02/22/2013

Page 1 of 1

ANALYSIS TEST RESULTS BY SAMPLE

Location: NORTH ANNA

Submitter: GLENN BISHOP

Dominion Laboratory Number: 408634

Sample Date: 02/07/2013

Description : RO BACKWASH

Unit: 0

Parameter	Result
-----	-----
Oil and Grease, PPM	< 5.00
Phenol, PPM	< 0.01
Aluminum as Al, PPM	0.09
Antimony as Sb, ppb	< 1.
Arsenic as As, ppb	< 3.
Barium as Ba, ppb	7.
Beryllium as Be, ppb	< 0.2
Cadmium as Cd, ppb	< 0.3
Chromium as Cr, ppb	< 1.
Cobalt as Co, ppb	< 0.6
Copper as Cu, ppb	1.
Iron as Fe, PPM	< 0.05
Lead as Pb, ppb	< 1.
Magnesium as Mg, PPM	2.34
Manganese as Mn, PPM	0.04
Mercury as Hg, ppb	< 0.2
Molybdenum as Mo, ppb	6.
Nickel as Ni, ppb	< 5.
Selenium as Se, ppb	< 2.
Silver as Ag, ppb	< 0.1
Thallium as Tl, ppb	< 0.2
Tin as Sn, ppb	< 5.
Titanium as Ti, ppb	< 2.
Zinc as Zn, PPM	< 0.010
Dis. Tl, ppb	< 0.2
Dis. Ti, ppb	< 2.
Dis. Sn, ppb	< 5.
Dis. Se, ppb	< 2.
Dis. Sb, ppb	< 1.
Dis. Pb, ppb	< 1.
Dis. Ni, ppb	< 5.
Dis. Mo, ppb	6.
Dis. Hg, ppb	< 0.2
Dis. Cu, ppb	< 1.
Dis. Cr, ppb	< 1.
Dis. Co, ppb	< 0.6
Dis. Cd, ppb	< 0.3
Dis. Be, ppb	< 0.2
Dis. Ba, ppb	7.
Dis. As, ppb	< 3.
Dis. Ag, ppb	< 0.1
Dis. Zn, PPM	< 0.010
Dis. Mn, PPM	0.03
Dis. Fe, PPM	< 0.05
Dis. Al, PPM	< 0.09
Dis. Mg, PPM	2.36
T-Hard. as CaCO3, PPM	22.23

DOMINION LABORATORY SERVICES
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REPORT PRODUCED ON 02/22/2013

Page 1 of 1

ANALYSIS TEST RESULTS BY SAMPLE

Location: NORTH ANNA

Submitter: GLENN BISHOP

Dominion Laboratory Number: 408635

Sample Date: 02/07/2013

Description : RO BACKWASH COMP

Unit: 0

Parameter	Result
-----	-----
Ammonia as N, PPM	0.08
Boron as B, PPM	0.07
COD, PPM	8.00
Fluoride as F, PPM	0.056
NO3+NO2, PPM	0.11
Sulfate as SO4, PPM	7.57
TK Nitrogen as N, PPM	0.38
TOC, PPM	4.7
TSS, PPM	17.2
Total Phos. as P, PPM	0.04
Aluminum as Al, PPM	2.24
Antimony as Sb, ppb	< 1.
Arsenic as As, ppb	< 3.
Barium as Ba, ppb	9.
Beryllium as Be, ppb	< 0.2
Cadmium as Cd, ppb	< 0.3
Chromium as Cr, ppb	< 1.
Cobalt as Co, ppb	< 0.6
Copper as Cu, ppb	3.
Iron as Fe, PPM	0.66
Lead as Pb, ppb	< 1.
Magnesium as Mg, PPM	2.15
Manganese as Mn, PPM	0.07
Mercury as Hg, ppb	< 0.2
Molybdenum as Mo, ppb	7.
Nickel as Ni, ppb	< 5.
Selenium as Se, ppb	< 2.
Silver as Ag, ppb	< 0.1
Thallium as Tl, ppb	< 0.2
Tin as Sn, ppb	< 5.
Titanium as Ti, ppb	< 2.
Zinc as Zn, PPM	0.011
T-Dis. Solids, PPM	46.5
Nitrate as N, PPM	0.11
Chloride as Cl, PPM	8.98
TPH-DRO, PPM	< 0.5
TPH-GRO, PPM	< 0.5
T-Hard. as CaCO3, PPM	23.94

DOMINION LABORATORY SERVICES
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REPORT PRODUCED ON 02/22/2013

Page 1 of 1

ANALYSIS TEST RESULTS BY SAMPLE

Location: NORTH ANNA

Submitter: GLENN BISHOP

Dominion Laboratory Number: 408636

Sample Date: 02/07/2013

Description : EQUIP BLANK

Unit: 0

Parameter	Result
-----	-----
Aluminum as Al, PPM	< 0.09
Antimony as Sb, ppb	< 1.
Arsenic as As, ppb	< 3.
Barium as Ba, ppb	< 3.
Beryllium as Be, ppb	< 0.2
Cadmium as Cd, ppb	< 0.3
Chromium as Cr, ppb	< 1.
Cobalt as Co, ppb	< 0.6
Copper as Cu, ppb	< 1.
Iron as Fe, PPM	< 0.05
Lead as Pb, ppb	< 1.
Magnesium as Mg, PPM	< 0.01
Manganese as Mn, PPM	< 0.02
Mercury as Hg, ppb	< 0.2
Molybdenum as Mo,ppb	< 1.
Nickel as Ni, ppb	< 5.
Selenium as Se, ppb	< 2.
Silver as Ag, ppb	< 0.1
Thallium as Tl, ppb	< 0.2
Tin as Sn, ppb	< 5.
Titanium as Ti, ppb	< 2.
Zinc as Zn, PPM	< 0.010

Dominion Laboratory Login Checklist

Station/Study: NA 117

WO#: 421387

Thermometer Used:
61951674 or 61951693

Temp: 5.2

	Type of Ice: Wet	Blue	None
Chain of Custody Present	<u>Yes</u>	No	N/A
Chain of Custody Filled Out	<u>Yes</u>	No	N/A
Chain of Custody Relinquished	<u>Yes</u>	No	N/A
Sampler Name on COC	<u>Yes</u>	No	N/A
Samples Labels match COC	<u>Yes</u>	No	N/A
Includes date/time/ID/Analysis	<u>Yes</u>	No	N/A
All entries in Ink	<u>Yes</u>	No	N/A
Samples Arrived within Holding Time	<u>Yes</u>	No	N/A
Short Hold Time Analysis (<72hr)	<u>Yes</u>	No	N/A
Rush Turn Around Time Requested	Yes	<u>No</u>	N/A
Sufficient Volume	<u>Yes</u>	No	N/A
Correct Containers Used	<u>Yes</u>	No	N/A
Containers Used: (circle)	<u>NH3</u>	<u>Solids</u>	<u>O&G</u>
	<u>POC</u>	OPO4	ABN
	IC	<u>DRD</u>	<u>Phenol</u>
	Hardness	Radioactivity	<u>Volatiles</u>
	Grain Size	Metals (Total or Dissolved)	
Other:			
# of Bottles on COC correct	<u>Yes</u>	No	N/A
Filtered Volume received for Dissolved Tests	<u>Yes</u>	No	N/A
Custody Seal Intact	Yes	No	<u>N/A</u>

Date/Time Received: 2/8/13 12:00

Received by: D. Clarke

Due Date on COC match worksheet	<u>Yes</u>	No	N/A
Tests Required on COC match worksheet	<u>Yes</u>	No	N/A

Verified by: ML

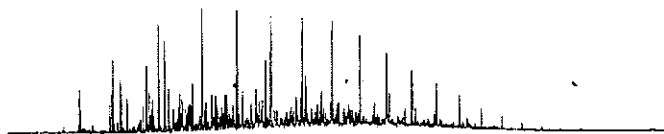
Date: 2-8-13

Temp @ Delivery = 5.2

Consider:

Flow	7.6°C
Temp (W-S)	6.45
pH	2.2
TRC	0.04 mg/l
Sulfite	

coc CPM RO Backwash1.xlsx



ANALYTICAL LABORATORY REPORT

21-Feb-13

Dominion Virginia Power
Attn: Glenn Bishop
4111 Castlewood Road
Richmond, Va. 23234

Date Received: 7-Feb-13
Date Sampled: -
Work Order No: 1302068-01
Client ID: **Nanna RO Backwash**

Test Description	Final Result	Reporting Limit	Units of Measure	Method Numbers*	Date Analyzed	Tech. Initials
Cyanide	<0.010	0.010	mg/L	4500CN E	11-Feb-13 at 8:30	HV
E Coli	<1.0	1.0	MPN/100ml	9223 B	7-Feb-13	MS
Fecal Coliform	<2	2	MPN/100ml	9221E	7-Feb-13	MS

Date Received: 7-Feb-13
Units of Measure: ug/L
Method Numbers*: EPA 624
Date Analyzed: 15-Feb-13
Technician: PB
Date Sampled: -
Work Order No: 1302068-01
Client ID: **Nanna RO Backwash**

Test Description	Final Result	Reporting Limit
Acrolein	<5.0	5.0
Acrylonitrile	<5.0	5.0
Benzene	<5.0	5.0
Bromoform	<5.0	5.0
Carbon tetrachloride	<5.0	5.0
Chlorobenzene	<5.0	5.0
Chloroethane	<5.0	5.0

VELAP# 460173
DCLS# 237



Primary Laboratories, Inc. Results

21-Feb-13

Date Received: 7-Feb-13
Units of Measure: ug/L
Method Numbers*: EPA 624 (con't)
Date Analyzed: 15-Feb-13
Technician: PB
Date Sampled: -
Work Order No: 1302068-01
Client ID: Nanna RO Backwash

Test Description	Final Result	Reporting Limit
2-Chloroethylvinyl ether	<5.0	5.0
Chloroform	<5.0	5.0
Dichlorobromomethane	<5.0	5.0
Methyl Bromide	<5.0	5.0
Methyl Chloride	<5.0	5.0
Chlorodibromomethane	<5.0	5.0
cis-1,3-Dichloropropene	<5.0	5.0
trans-1,3-Dichloropropene	<5.0	5.0
1,2-Dichlorobenzene	<5.0	5.0
1,3-Dichlorobenzene	<5.0	5.0
1,4-Dichlorobenzene	<5.0	5.0
1,1-Dichloroethane	<5.0	5.0
1,2-Dichloroethane	<5.0	5.0
1,1-Dichloroethylene	<5.0	5.0
1,2-Trans-Dichloroethylene	<5.0	5.0
1,2-Dichloropropane	<5.0	5.0
Ethylbenzene	<5.0	5.0
Methylene Chloride	<5.0	5.0
1,1,2,2-Tetrachloroethane	<5.0	5.0
Tetrachloroethylene	<5.0	5.0
Toluene	8.0	5.0
1,1,1-Trichloroethane	<5.0	5.0
1,1,2-Trichloroethane	<5.0	5.0
Trichloroethylene	<5.0	5.0
Vinyl Chloride	<5.0	5.0

VELAP# 460173
DCLS# 237



Primary Laboratories, Inc. Results

21-Feb-13

Date Sampled: -
Work Order No: 1302068-02
Client ID: Nanna RO Backwash

Test Description	Final Result	Reporting Limit	Units of Measure	Method Numbers*	Date Analyzed	Tech. Initials
Hydrogen Sulfide	<0.05	0.05	mg/L	376.1	14-Feb-13 at 10:00	HV
Trivalent Chromium	<0.020	0.020	mg/L	3120 B	19-Feb-13	HV
Hexavalent Chromium	<0.005	0.005	mg/L	3500	8-Feb-13 at 11:00	NA
Bromide	0.17	0.10	mg/L	EPA 300.0	13-Feb-13 at 10:28	ML
Color @ pH - 7.83	8.0	5.0	PCU	2120 B	7-Feb-13 at 15:00	NA
Sulfide	<0.05	0.05	mg/L	4500S ² E	14-Feb-13 at 10:00	NA
MBAS	<0.100	0.100	mg/L	5540C	11-Feb-13 at 16:00	AC

AC- Analytics Corporation
ML - Microbac Laboratories

* All methods are Standard Methods 18th Edition unless otherwise noted.
Note: All analyses are NELAC certified except where noted with a (#).

Signature: _____

Parry L Bragg
Laboratory Manager

Date: _____

2/21/13

These analytical results are based upon materials provided by the client and are intended for the exclusive use of the client. These analytical results represent the best judgement of Primary Laboratories, Inc. Primary Laboratories, Inc. assumes no responsibility, express or implied, as to the interpretation of the analytical results contained in this report. This report is not to be reproduced except with the written approval of Primary Laboratories, Inc.

VELAP# 460173
DCLS# 237



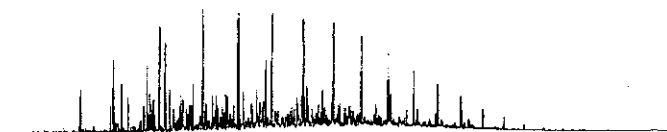
Location:	Requested by:	Priority:
Recurd Date:	Phone:	Date Analysis Complete:
Comment:	Sampled by:	Date Approved Released:

 Σ = Dioxin screen[illegible]

Primary Laboratories
7423 Lee Davis Road
Mechanicsville, VA 23111
804-559-9004

Primary Laboratories, Inc.

7423 Lee Davis Road, Mechanicsville, VA 23111 • Telephone (804) 559-9004 • Fax (804) 559-9306



ANALYTICAL LABORATORY REPORT

28-Feb-13

Dominion Virginia Power
Attn: Glenn Bishop
4111 Castlewood Road
Richmond, Va. 23234

Date Received: 8-Feb-13
Date Sampled: 8-Feb-13
Work Order No: 1302082-01
Client ID: **Nanna RO Backwash**

Test Description	Final Result	Reporting Limit	Units of Measure	Method Numbers*	Date Analyzed	Tech. Initials
BOD	<3.0	3.0	mg/L	5210 B	8-Feb-13 at 16:45	NA
Tributyltin	<0.03	0.03	ug/L	GC/FPD	19-Feb-13 at 23:19	UL
Nonylphenol	<5	5	ug/L	D7065-06	27-Feb-13	JRA

Date Sampled: 8-Feb-13
Work Order No: 1302082-01
Client ID: **Nanna RO Backwash**

Test Description	Final Result	Reporting Limit	Units of Measure	Method Numbers*	Date Analyzed	Tech. Initials
Organophosphorus Pesticides						
Chlorpyrifos	<0.2	0.2	ug/L	EPA 622	14-Feb-13	JRA
Demeton	<1	1	ug/L	EPA 614	14-Feb-13	JRA
Guthion	<1	1	ug/L	EPA 622	14-Feb-13	JRA
Malathion	<1	1	ug/L	EPA 614	14-Feb-13	JRA
Parathion	<1	1	ug/L	EPA 614	14-Feb-13	JRA
Diazinon	<1	1	ug/L	EPA 614	14-Feb-13	JRA

VELAP# 460173
DCLS# 237



Primary Laboratories, Inc. Results

28-Feb-13

Date Sampled: 8-Feb-13
Work Order No: 1302082-01
Client ID: **Nanna RO Backwash**

Test Description	Final Result	Reporting Limit	Units of Measure	Method Numbers*	Date Analyzed	Tech. Initials
Pesticides						
Aldrin	<0.05	0.05	ug/L	EPA 608	13-Feb-13	UL
Chlordane	<0.20	0.20	ug/L	EPA 608	13-Feb-13	UL
Dieldrin	<0.05	0.05	ug/L	EPA 608	13-Feb-13	UL
4,4-DDT	<0.05	0.05	ug/L	EPA 608	13-Feb-13	UL
4,4-DDE	<0.10	0.10	ug/L	EPA 608	13-Feb-13	UL
4,4-DDD	<0.10	0.10	ug/L	EPA 608	13-Feb-13	UL
Endosulfan sulfate	<0.05	0.05	ug/L	EPA 608	13-Feb-13	UL
Endosulfan I	<0.05	0.05	ug/L	EPA 608	13-Feb-13	UL
Endosulfan II	<0.05	0.05	ug/L	EPA 608	13-Feb-13	UL
Endrin	<0.05	0.05	ug/L	EPA 608	13-Feb-13	UL
Endrin Aldehyde	<0.50	0.50	ug/L	EPA 608	13-Feb-13	UL
Alpha-BHC	<0.10	0.10	ug/L	EPA 608	13-Feb-13	UL
Beta-BHC	<0.10	0.10	ug/L	EPA 608	13-Feb-13	UL
Delta-BHC	<0.10	0.10	ug/L	EPA 608	13-Feb-13	UL
Gamma-BHC (Lindane)	<0.05	0.05	ug/L	EPA 608	13-Feb-13	UL
Heptachlor	<0.05	0.05	ug/L	EPA 608	13-Feb-13	UL
Heptachlor Epoxide	<0.10	0.10	ug/L	EPA 608	13-Feb-13	UL
Kepone	<10	10	ug/L	EPA 608	13-Feb-13	UL
Methoxychlor	<0.10	0.10	ug/L	EPA 608	13-Feb-13	UL
Mirex	<0.20	0.20	ug/L	EPA 608	13-Feb-13	UL
Toxaphene	<1	1	ug/L	EPA 608	13-Feb-13	UL
PCB-1016	<0.5	0.5	ug/L	EPA 608	13-Feb-13	UL
PCB-1221	<0.5	0.5	ug/L	EPA 608	13-Feb-13	UL
PCB-1232	<0.5	0.5	ug/L	EPA 608	13-Feb-13	UL
PCB-1242	<0.5	0.5	ug/L	EPA 608	13-Feb-13	UL
PCB-1248	<0.5	0.5	ug/L	EPA 608	13-Feb-13	UL
PCB-1254	<0.5	0.5	ug/L	EPA 608	13-Feb-13	UL
PCB-1260	<0.5	0.5	ug/L	EPA 608	13-Feb-13	UL
Total PCB	<0.5	0.5	ug/L	EPA 608	13-Feb-13	UL

VELAP# 460173
DCLS# 237



Primary Laboratories, Inc. Results

28-Feb-13

Method Numbers*: EPA 624
Units of Measure: ug/L
Date Analyzed: 15-Feb-13
Technician: PB
Date Sampled: 8-Feb-13
Work Order No: 1302082-01
Client ID:

Nanna RO Backwash

Test Description	Final Result	Reporting Limit
Acrolein	<5.0	5.0
Acrylonitrile	<5.0	5.0
Benzene	<5.0	5.0
Bromoform	<5.0	5.0
Carbon tetrachloride	<5.0	5.0
Chlorobenzene	<5.0	5.0
Chloroethane	<5.0	5.0
2-Chloroethylvinyl ether	<5.0	5.0
Chloroform	<5.0	5.0
Dichlorobromomethane	<5.0	5.0
Methyl Bromide	<5.0	5.0
Methyl Chloride	<5.0	5.0
Chlorodibromomethane	<5.0	5.0
cis-1,3-Dichloropropene	<5.0	5.0
trans-1,3-Dichloropropene	<5.0	5.0
1,2-Dichlorobenzene	<5.0	5.0
1,3-Dichlorobenzene	<5.0	5.0
1,4-Dichlorobenzene	<5.0	5.0
1,1-Dichloroethane	<5.0	5.0
1,2-Dichloroethane	<5.0	5.0
1,1-Dichloroethylene	<5.0	5.0
1,2-Trans-Dichloroethylene	<5.0	5.0
1,2-Dichloropropane	<5.0	5.0
Ethylbenzene	<5.0	5.0
Methylene Chloride	<5.0	5.0
1,1,2,2-Tetrachloroethane	<5.0	5.0
Tetrachloroethylene	<5.0	5.0
Toluene	<5.0	5.0
1,1,1-Trichloroethane	<5.0	5.0
1,1,2-Trichloroethane	<5.0	5.0
Trichloroethylene	<5.0	5.0
Vinyl Chloride	<5.0	5.0

VELAP# 460173
DCLS# 237



Primary Laboratories, Inc. Results

28-Feb-13

Method Numbers*: EPA 625
Units of Measure: ug/L
Date Analyzed: 18-Feb-13
Technician: UL
Date Sampled: 8-Feb-13
Work Order No: 1302082-01
Client ID: **Nanna RO Backwash**

Test Description	Final Result	Detection Limit
Acenaphthene	<5.0	5.0
Acenaphthylene	<5.0	5.0
Anthracene	<5.0	5.0
Benzidine	<5.0	5.0
Benzo(a) anthracene	<5.0	5.0
Benzo(b) fluoranthene	<5.0	5.0
Benzo(k) fluoranthene	<5.0	5.0
Benzo(g,h,i) perylene	<5.0	5.0
Benzo(a)pyrene	<5.0	5.0
bis-(2-Chloroethoxy)methane	<5.0	5.0
bis-(2-Chloroethyl)ether	<5.0	5.0
bis-(2-Chloroisopropyl)ether	<5.0	5.0
bis-(2-Ethylhexyl)phthalate	<5.0	5.0
4-Bromophenyl phenyl ether	<5.0	5.0
Butyl benzyl phthalate	<5.0	5.0
2-Chloronaphthalene	<5.0	5.0
Parachlorometa Cresol	<5.0	5.0
2-Chlorophenol	<5.0	5.0
4-Chlorophenyl phenyl ether	<5.0	5.0
Chrysene	<5.0	5.0
Dibenzo(a,h)anthracene	<5.0	5.0
Di-n-butyl phthalate	<5.0	5.0
3,3-Dichlorobenzidine	<5.0	5.0
2,4-Dichlorophenol	<5.0	5.0
Diethyl phthalate	<5.0	5.0
2,4-Dimethylphenol	<5.0	5.0
Dimethyl phthalate	<5.0	5.0
4,6-Dinitro-o-cresol	<5.0	5.0
2,4-Dinitrophenol	<5.0	5.0
2,4-Dinitrotoluene	<5.0	5.0

VELAP# 460173
DCLS# 237



Primary Laboratories, Inc. Results

28-Feb-13

Method Numbers*: EPA 625 (con't)
Units of Measure: ug/L
Date Analyzed: 18-Feb-13
Technician: UL
Date Sampled: 8-Feb-13
Work Order No: 1302082-01
Client ID:

Nanna RO Backwash

Test Description	Final Result	Detection Limit
2,6-Dinitrotoluene	<5.0	5.0
Di-n-octylphthalate	<5.0	5.0
1,2-Diphenylhydrazine	<5.0	5.0
Fluoranthene	<5.0	5.0
Fluorene	<5.0	5.0
Hexachlorobenzene	<5.0	5.0
Hexachlorobutadiene	<5.0	5.0
Hexachlorocyclopentadiene	<5.0	5.0
Hexachloroethane	<5.0	5.0
Indeno(1,2,3-cd) pyrene	<5.0	5.0
Isophorone	<5.0	5.0
Naphthalene	<5.0	5.0
Nitrobenzene	<5.0	5.0
2-Nitrophenol	<5.0	5.0
4-Nitrophenol	<5.0	5.0
N-Nitrosodimethylamine	<5.0	5.0
N-Nitrosodiphenylamine	<5.0	5.0
N-Nitrosodi-n-propylamine	<5.0	5.0
Pentachlorophenol	<5.0	5.0
Phenanthrene	<5.0	5.0
Phenol	<5.0	5.0
Pyrene	<5.0	5.0
1,2,4-Trichlorobenzene	<5.0	5.0
2,4,6-Trichlorophenol	<5.0	5.0
TCDD- Dioxin Screen	<5.0	5.0

VELAP# 460173
DCLS# 237



Primary Laboratories, Inc.
Results

28-Feb-13

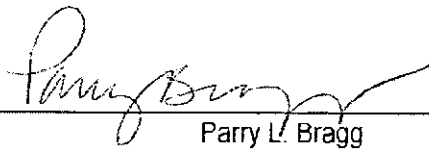
Date Sampled: 8-Feb-13
Work Order No: 1302082-01
Client ID: **Nanna RO Backwash**

Test Description	Final Result	Reporting Limit	Units of Measure	Method Numbers*	Date Analyzed	Tech. Initials
HERBICIDES						
2,4-D	<0.010	0.010	mg/L	SW-846 8151A	20-Feb-13	HV
2,4,5-TP	<0.002	0.002	mg/L	SW-846 8151A	20-Feb-13	HV

JRA- James R. Reed & Associates
UL- Universal Laboratories

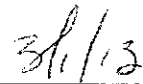
* All methods are Standard Methods 18th Edition unless otherwise noted.
Note: All analyses are NELAC certified except where noted with a (#).

Signature: _____



Parry L. Bragg
Laboratory Manager


Date: _____



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VELAP# 460173
DCLS# 237




 Day 2 Sample Box

Bottle Types: Cn=Cyanide, FC=Fecals, EC = E coli, H₂S = Hydrogen sulfide, Asb = Asbestos, BOD=Biological Oxygen Demand
P/P=Pesticide, PCBs, TBT = Tributyltin, R = Radioactivity, Br = Bromide, Color, Sul = sulfide, Sur = Surfactants, DS = Dioxin strong

Preservatives. HCl=hydrochloric acid, CS=Ce. Sulfate, S=Sulfuric acid, N=Nitric acid, ZA=Zinc acetate, SH=Sodium Hydroxide

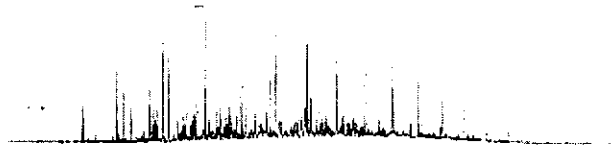
Tests Required 1= Cu, V, Pb, Fe, Fecal coliforms, *E. coli*,
2= H₂S, AsB, Asbestos, BOD, Pest/PCBs, TBT, Nonylphenol, [1,2-Diphenylhydrazine]
3 = Cr3, Cr6
4= [Br, Color], Sulfide, Surfactants
5= Dioxin screen

1302082

coc CPM RO Backwash1.xlsx

Primary Laboratories, Inc.

7423 Lee Davis Road, Mechanicsville, VA 23111 • Telephone (804) 559-9004 • Fax (804) 559-9306



ANALYTICAL LABORATORY REPORT

26-Mar-13

Dominion Virginia Power
Attn: Glenn Bishop
4111 Castlewood Road
Richmond, Va. 23234

Date Received: 26-Feb-13
Date Sampled: 26-Feb-13
Work Order No: 1302254-01
Client ID: GAC 24hr Backwash

Test Description	Final Result	Reporting Limit	Units of Measure	Method Numbers*	Date Analyzed	Tech. Initials
Metals						
Aluminum	1.920	0.050	mg/L	3120 B	6-Mar-13	HV
Antimony	<0.100	0.100	mg/L	3120 B	6-Mar-13	HV
Arsenic	<0.050	0.050	mg/L	3120 B	6-Mar-13	HV
Barium	<0.020	0.020	mg/L	3120 B	6-Mar-13	HV
Beryllium	<0.010	0.010	mg/L	3120 B	6-Mar-13	HV
Boron	<0.100	0.100	mg/L	3120 B	6-Mar-13	HV
Cadmium	0.0010	0.0003	mg/L	3120 B	25-Mar-13	HV
Chromium	<0.020	0.020	mg/L	3120 B	6-Mar-13	HV
Cobalt	<0.020	0.020	mg/L	3120 B	6-Mar-13	HV
Copper	0.007	0.001	mg/L	3120 B	25-Mar-13	HV
Iron	0.352	0.050	mg/L	3120 B	6-Mar-13	HV
Lead	0.007	0.001	mg/L	3120 B	25-Mar-13	HV
Magnesium	0.007	0.020	mg/L	3120 B	6-Mar-13	HV
Manganese	0.054	0.020	mg/L	3120 B	6-Mar-13	HV
Mercury	<0.0002	0.0002	mg/L	3112 B	6-Mar-13	HV
Molybdenum	0.076	0.020	mg/L	3120 B	6-Mar-13	HV
Nickel	0.008	0.005	mg/L	3120 B	25-Mar-13	HV
Selenium	<0.002	0.002	mg/L	3120 B	25-Mar-13	HV
Silver	<0.0001	0.0001	mg/L	3120 B	25-Mar-13	HV
Thallium	0.0060	0.0002	mg/L	3120 B	25-Mar-13	HV
Tin	<0.050	0.050	mg/L	3120 B	6-Mar-13	HV
Titanium	<0.020	0.020	mg/L	3120 B	6-Mar-13	HV
Zinc	<0.010	0.010	mg/L	3120 B	6-Mar-13	HV
Hardness	17.3	1.0	mg/L CaCO ₃	2340 C	14-Mar-13 at 11:00	NA

VELAP# 460173
DCL# 237



Primary Laboratories, Inc. **Results**

26-Mar-13

Date Sampled: 26-Feb-13
Work Order No: 1302254-01
Client ID: **GAC 24hr Backwash**

Test Description	Final Result	Reporting Limit	Units of Measure	Method Numbers*	Date Analyzed	Tech. Initials
Ammonia	0.05	0.01	mg/L	4500NH ₃ F	5-Mar-13 at 9:45	NA
TKN	0.58	0.20	mg/L	4500-N _{org} C	7-Mar-13 at 13:30	NA
Total Phosphorus	0.03	0.01	mg/L	4500P E	1-Mar-13 at 11:00	NA
COD	18.0	2.0	mg/L	5520 C	1-Mar-13 at 10:00	NA
Nitrate/Nitrite	0.18	0.01	mg/L	4500 NO ₃ ⁻ E	6-Mar-13 at 13:30	NA
TPH, Diesel Range	<1	1	mg/L	3510/8015B (M)	28-Feb-13	HV
TOC	<1.0	1.0	mg/L	5310 C	27-Feb-13 at 12:00	PB
TSS	15.2	1.0	mg/L	2540 D	28-Feb-13	HV
Hydrogen Sulfide	<0.05	0.05	mg/L	376.1	8-Mar-13	HV
BOD	<2.0	2.0	mg/L	5210 B	27-Feb-13	PB
Tributyltin	<0.03	0.03	ug/L	GC/FPD	7-Mar-13 at 13:01	UL
Hexavalent Chromium	<0.005	0.005	mg/L	3500	26-Feb-13 at 16:00	PB
Bromide	0.20	0.10	mg/L	EPA 300.0	8-Mar-13 20.05	ML
Color pH- 7.85	8.0	5.0	PCU	2120 B	27-Feb-13 at 11:00	NA

VELAP# 460173
DCLS# 237



Primary Laboratories, Inc. Results

26-Mar-13

Date Sampled: 26-Feb-13

Work Order No: 1302254-01

Client ID: GAC 24hr Backwash

Test Description	Final Result	Reporting Limit	Units of Measure	Method Numbers*	Date Analyzed	Tech. Initials
Sulfide	<0.05	0.05	mg/L	4500S ²⁻ E	4-Mar-13 at 11:00	NA
Fluoride	0.41	0.10	mg/L	EPA 300.0	8-Mar-13 at 20:05	ML
TDS	80	10	mg/L	2540 C	4-Mar-13	HV
Nitrate	0.18	0.01	mg/L	4500 NO ₃ ⁻ E	6-Mar-13 at 13:30	NA
Chloride	8.4	1.0	mg/L	4500CL B	5-Mar-13 at 16:30	NA
Sulfate	7.7	2.0	mg/L	4500SO ₄ ²⁻ E	4-Mar-13 at 14:00	NA
TPH, Gasoline Range	<1.0	1.0	mg/L	8260	7-Mar-13	PB

VELAP# 460173
DCLS# 237



Primary Laboratories, Inc. Results

26-Mar-13

Date Received: 29-Nov-12
Units of Measure: ug/L
Method Numbers*: EPA 624
Date Analyzed: 7-Mar-13
Technician: PB
Date Sampled: 26-Feb-13
Work Order No: 1302254-01
Client ID: GAC 24hr Backwash

Test Description	Final Result	Reporting Limit
Acrolein	<5.0	5.0
Acrylonitrile	<5.0	5.0
Benzene	<5.0	5.0
Bromoform	<5.0	5.0
Carbon tetrachloride	<5.0	5.0
Chlorobenzene	<5.0	5.0
Chloroethane	<5.0	5.0
2-Chloroethylvinyl ether	<5.0	5.0
Chloroform	<5.0	5.0
Dichlorobromomethane	<5.0	5.0
Methyl Bromide	<5.0	5.0
Methyl Chloride	<5.0	5.0
Chlorodibromomethane	<5.0	5.0
cis-1,3-Dichloropropene	<5.0	5.0
trans-1,3-Dichloropropene	<5.0	5.0
1,2-Dichlorobenzene	<5.0	5.0
1,3-Dichlorobenzene	<5.0	5.0
1,4-Dichlorobenzene	<5.0	5.0
1,1-Dichloroethane	<5.0	5.0
1,2-Dichloroethane	<5.0	5.0
1,1-Dichloroethylene	<5.0	5.0
1,2-Trans-Dichloroethylene	<5.0	5.0
1,2-Dichloropropane	<5.0	5.0
Ethylbenzene	8.0	5.0
Methylene Chloride	<5.0	5.0
1,1,2,2-Tetrachloroethane	<5.0	5.0
Tetrachloroethylene	<5.0	5.0
Toluene	11.7	5.0
1,1,1-Trichloroethane	<5.0	5.0
1,1,2-Trichloroethane	<5.0	5.0
Trichloroethylene	<5.0	5.0
Vinyl Chloride	<5.0	5.0

VELAP# 460173
DCLS# 237



Primary Laboratories, Inc. Results

26-Mar-13

Date Sampled: 26-Feb-13
Work Order No: 1302254-02
Client ID: Nanna RO Backwash

Test Description	Final Result	Reporting Limit	Units of Measure	Method Numbers*	Date Analyzed	Tech. Initials
Oil & Grease	8.4	5.0	mg/L	EPA 1664 A	27-Feb-13	HV
Nitrate/Nitrite	0.11	0.01	mg/L	4500 NO ₃ ⁻ E	6-Mar-13 at 13:30	NA
TSS	5.2	1.0	mg/L	2540 D	28-Feb-13	HV
Fluoride	0.15	0.10	mg/L	EPA 300.0	19-Mar-13 at 2:30	ML
TDS	56	10	mg/L	2540 C	4-Mar-13	HV
Nitrate	0.11	0.01	mg/L	4500 NO ₃ ⁻ E	6-Mar-13 at 13:30	NA
Chloride	8.9	1.0	mg/L	4500CL B	5-Mar-13 at 16:30	NA
Sulfate	3.8	2.0	mg/L	4500SO ₄ ²⁻ E	4-Mar-13 at 14:00	NA
Hardness	14.4	1.0	mg/L CaCO ₃	2340 C	14-Mar-13 at 11:00	NA

VELAP# 460173
DCLS# 237



Primary Laboratories, Inc. Results

26-Mar-13

Date Sampled: 26-Feb-13
Work Order No: 1302254-02
Client ID: Nanna RO Backwash

Test Description	Final Result	Reporting Limit	Units of Measure	Method Numbers*	Date Analyzed	Tech. Initials
Metals						
Aluminum	1.050	0.050	mg/L	3120 B	6-Mar-13	HV
Antimony	<0.100	0.100	mg/L	3120 B	6-Mar-13	HV
Arsenic	<0.050	0.050	mg/L	3120 B	6-Mar-13	HV
Barium	<0.020	0.020	mg/L	3120 B	6-Mar-13	HV
Beryllium	<0.010	0.010	mg/L	3120 B	6-Mar-13	HV
Boron	<0.100	0.100	mg/L	3120 B	6-Mar-13	HV
Cadmium	<0.0003	0.0003	mg/L	3120 B	25-Mar-13	HV
Chromium	<0.020	0.020	mg/L	3120 B	6-Mar-13	HV
Cobalt	<0.020	0.020	mg/L	3120 B	6-Mar-13	HV
Copper	0.005	0.001	mg/L	3120 B	25-Mar-13	HV
Iron	0.159	0.050	mg/L	3120 B	6-Mar-13	HV
Lead	<0.001	0.001	mg/L	3120 B	25-Mar-13	HV
Magnesium	<0.020	0.020	mg/L	3120 B	6-Mar-13	HV
Manganese	0.034	0.020	mg/L	3120 B	6-Mar-13	HV
Mercury	<0.0002	0.0002	mg/L	3112 B	6-Mar-13	HV
Molybdenum	0.051	0.020	mg/L	3120 B	6-Mar-13	HV
Nickel	0.005	0.005	mg/L	3120 B	25-Mar-13	HV
Selenium	<0.002	0.002	mg/L	3120 B	25-Mar-13	HV
Silver	<0.0001	0.0001	mg/L	3120 B	25-Mar-13	HV
Thallium	<0.0002	0.0002	mg/L	3120 B	25-Mar-13	HV
Tin	<0.050	0.050	mg/L	3120 B	6-Mar-13	HV
Titanium	<0.020	0.020	mg/L	3120 B	6-Mar-13	HV
Zinc	<0.010	0.010	mg/L	3120 B	6-Mar-13	HV

VELAP# 480173
DCLS# 237



Primary Laboratories, Inc. **Results**

26-Mar-13

Date Sampled: 26-Feb-13
Work Order No: 1302254-02
Client ID: **Nanna RO Backwash**

Test Description	Final Result	Reporting Limit	Units of Measure	Method Numbers*	Date Analyzed	Tech. Initials
Metals, Dissolved						
Aluminum	0.054	0.050	mg/L	3120 B	6-Mar-13	HV
Antimony	<0.100	0.100	mg/L	3120 B	6-Mar-13	HV
Arsenic	<0.050	0.050	mg/L	3120 B	6-Mar-13	HV
Barium	<0.020	0.020	mg/L	3120 B	6-Mar-13	HV
Beryllium	<0.010	0.010	mg/L	3120 B	6-Mar-13	HV
Boron	<0.100	0.100	mg/L	3120 B	6-Mar-13	HV
Cadmium	<0.0003	0.0003	mg/L	3120 B	25-Mar-13	HV
Chromium	<0.020	0.020	mg/L	3120 B	6-Mar-13	HV
Cobalt	<0.020	0.020	mg/L	3120 B	6-Mar-13	HV
Copper	0.004	0.001	mg/L	3120 B	25-Mar-13	HV
Iron	<0.050	0.050	mg/L	3120 B	6-Mar-13	HV
Lead	<0.001	0.001	mg/L	3120 B	25-Mar-13	HV
Magnesium	<0.020	0.020	mg/L	3120 B	6-Mar-13	HV
Manganese	<0.020	0.020	mg/L	3120 B	6-Mar-13	HV
Mercury	<0.0002	0.0002	mg/L	3112 B	6-Mar-13	HV
Molybdenum	0.041	0.020	mg/L	3120 B	6-Mar-13	HV
Nickel	<0.005	0.005	mg/L	3120 B	25-Mar-13	HV
Selenium	<0.002	0.002	mg/L	3120 B	25-Mar-13	HV
Silver	<0.0001	0.0001	mg/L	3120 B	25-Mar-13	HV
Thallium	<0.0002	0.0002	mg/L	3120 B	25-Mar-13	HV
Tin	<0.050	0.050	mg/L	3120 B	6-Mar-13	HV
Titanium	<0.020	0.020	mg/L	3120 B	6-Mar-13	HV
Zinc	<0.010	0.010	mg/L	3120 B	6-Mar-13	HV

VELAP# 460173
DCLS# 237



Primary Laboratories, Inc. Results

26-Mar-13

Date Sampled: 26-Feb-13
Work Order No: 1302254-03
Client ID: GAC Bkwash1

Test Description	Final Result	Reporting Limit	Units of Measure	Method Numbers*	Date Analyzed	Tech. Initials
Oil & Grease	5.2	5.0	mg/L	EPA 1664 A	27-Feb-13	HV
Phenols	<0.05	0.05	mg/L	5530B C	11-Mar-13 at 14:00	NA
Ammonia	0.07	0.10	mg/L	4500NH ₃ F	5-Mar-13 at 9:45	NA
TKN	0.96	0.20	mg/L	4500-N _{org} C	7-Mar-13 at 13:30	NA
Total Phosphorus	0.10	0.01	mg/L	4500P E	1-Mar-13 at 11:00	NA
COD	32.0	10.0	mg/L	5520 C	1-Mar-13 at 10:00	NA
Nitrate/Nitrite	0.13	0.01	mg/l	4500 NO ₃ ⁻ E	6-Mar-13 at 13:30	NA
TPH, Diesel Range	<1	1	mg/L	3510/8015B (M)	28-Feb-13	HV
TOC	<1.0	1.0	mg/L	5310 C	27-Feb-13 at 12:00	PB
TSS	67.6	1.0	mg/L	2540 D	28-Feb-13	HV
Cyanide	<0.010	0.010	mg/L	4500CN E	7-Mar-13	HV
E Coli	<1.0	1.0	MPN/100ml	9223 B	26-Feb-13 at 16:15	MS
Fecal Coliform	2	2	MPN/100ml	9221E	26-Feb-13 at 16:15	MS
Fluoride	0.33	0.10	mg/L	EPA 300.0	8-Mar-13 at 20:17	ML

VELAP# 460173
DCLS# 237



Primary Laboratories, Inc. Results

26-Mar-13

Date Sampled: 26-Feb-13
Work Order No: 1302254-03
Client ID: GAC Bkwash1

Test Description	Final Result	Reporting Limit	Units of Measure	Method Numbers*	Date Analyzed	Tech. Initials
TDS	62	10	mg/L	2540 C	4-Mar-13	HV
Nitrate	0.13	0.01	mg/L	4500 NO ₃ ⁻ E	6-Mar-13 at 13:30	NA
Chloride	6.5	1.0	mg/L	4500CL B	5-Mar-13 at 16:30	NA
Sulfate	9.6	2.0	mg/L	4500SO ₄ ²⁻ E	4-Mar-13 at 14:00	NA
Hardness	22.1	1.0	mg/L CaCO ₃	2340 C	14-Mar-13 at 11:00	NA
TPH, Gasoline Range	<1.0	1.0	mg/L	8260	7-Mar-13	PB

VELAP# 460173
DCLS# 237



Primary Laboratories, Inc. **Results**

25-Mar-13

Date Sampled: 26-Feb-13
Work Order No: 1302254-03
Client ID: GAC Bkwash1

Test Description	Final Result	Reporting Limit	Units of Measure	Method Numbers*	Date Analyzed	Tech. Initials
Metals						
Aluminum	6.110	0.050	mg/L	3120 B	6-Mar-13	HV
Antimony	<0.100	0.100	mg/L	3120 B	6-Mar-13	HV
Arsenic	<0.050	0.050	mg/L	3120 B	6-Mar-13	HV
Barium	<0.020	0.020	mg/L	3120 B	6-Mar-13	HV
Beryllium	<0.010	0.010	mg/L	3120 B	6-Mar-13	HV
Boron	<0.100	0.100	mg/L	3120 B	6-Mar-13	HV
Cadmium	<0.0003	0.0003	mg/L	3120 B	25-Mar-13	HV
Chromium	<0.020	0.020	mg/L	3120 B	6-Mar-13	HV
Cobalt	<0.020	0.020	mg/L	3120 B	6-Mar-13	HV
Copper	0.011	0.001	mg/L	3120 B	25-Mar-13	HV
Iron	0.781	0.050	mg/L	3120 B	6-Mar-13	HV
Lead	<0.001	0.001	mg/L	3120 B	25-Mar-13	HV
Magnesium	<0.020	0.020	mg/L	3120 B	6-Mar-13	HV
Manganese	0.186	0.020	mg/L	3120 B	6-Mar-13	HV
Mercury	<0.0002	0.0002	mg/L	3112 B	6-Mar-13	HV
Molybdenum	0.046	0.020	mg/L	3120 B	6-Mar-13	HV
Nickel	<0.005	0.005	mg/L	3120 B	25-Mar-13	HV
Selenium	<0.002	0.002	mg/L	3120 B	25-Mar-13	HV
Silver	<0.0001	0.0001	mg/L	3120 B	25-Mar-13	HV
Thallium	<0.0002	0.0002	mg/L	3120 B	25-Mar-13	HV
Tin	<0.050	0.050	mg/L	3120 B	6-Mar-13	HV
Titanium	<0.020	0.020	mg/L	3120 B	6-Mar-13	HV
Zinc	<0.010	0.010	mg/L	3120 B	6-Mar-13	HV

VELAP# 460173
DCLS# 237



Primary Laboratories, Inc. Results

26-Mar-13

Date Sampled: 26-Feb-13
Work Order No: 1302254-03
Client ID: GAC Bkwash1

Test Description	Final Result	Reporting Limit	Units of Measure	Method Numbers*	Date Analyzed	Tech. Initials
Metals, Dissolved						
Aluminum	<0.050	0.050	mg/L	3120 B	6-Mar-13	HV
Antimony	<0.100	0.100	mg/L	3120 B	6-Mar-13	HV
Arsenic	<0.050	0.050	mg/L	3120 B	6-Mar-13	HV
Barium	<0.020	0.020	mg/L	3120 B	6-Mar-13	HV
Beryllium	<0.010	0.010	mg/L	3120 B	6-Mar-13	HV
Boron	<0.100	0.100	mg/L	3120 B	6-Mar-13	HV
Cadmium	<0.0003	0.0003	mg/L	3120 B	25-Mar-13	HV
Chromium	<0.020	0.020	mg/L	3120 B	6-Mar-13	HV
Cobalt	<0.020	0.020	mg/L	3120 B	6-Mar-13	HV
Copper	0.004	0.001	mg/L	3120 B	25-Mar-13	HV
Iron	<0.050	0.050	mg/L	3120 B	6-Mar-13	HV
Lead	<0.001	0.001	mg/L	3120 B	25-Mar-13	HV
Magnesium	<0.020	0.020	mg/L	3120 B	6-Mar-13	HV
Manganese	<0.020	0.020	mg/L	3120 B	6-Mar-13	HV
Mercury	<0.0002	0.0002	mg/L	3112 B	6-Mar-13	HV
Molybdenum	0.033	0.020	mg/L	3120 B	6-Mar-13	HV
Nickel	<0.005	0.005	mg/L	3120 B	25-Mar-13	HV
Selenium	<0.002	0.002	mg/L	3120 B	25-Mar-13	HV
Silver	<0.0001	0.0001	mg/L	3120 B	25-Mar-13	HV
Thallium	<0.0002	0.0002	mg/L	3120 B	25-Mar-13	HV
Tin	<0.050	0.050	mg/L	3120 B	6-Mar-13	HV
Titanium	<0.020	0.020	mg/L	3120 B	6-Mar-13	HV
Zinc	<0.010	0.010	mg/L	3120 B	6-Mar-13	HV

VELAP# 480173
DCLS# 237



Primary Laboratories, Inc. Results

26-Mar-13

Date Received: 26-Feb-13
Units of Measure: ug/L
Method Numbers*: EPA 824
Date Analyzed: 7-Mar-13
Technician: PB
Date Sampled: 26-Feb-13
Work Order No: 1302254-03
Client ID: GAC Bkwash1

Test Description	Final Result	Reporting Limit
Acrolein	<5.0	5.0
Acrylonitrile	<5.0	5.0
Benzene	<5.0	5.0
Bromoform	<5.0	5.0
Carbon tetrachloride	<5.0	5.0
Chlorobenzene	<5.0	5.0
Chloroethane	<5.0	5.0
2-Chloroethylvinyl ether	<5.0	5.0
Chloroform	<5.0	5.0
Dichlorobromomethane	<5.0	5.0
Methyl Bromide	<5.0	5.0
Methyl Chloride	<5.0	5.0
Chlorodibromomethane	<5.0	5.0
cis-1,3-Dichloropropene	<5.0	5.0
trans-1,3-Dichloropropene	<5.0	5.0
1,2-Dichlorobenzene	<5.0	5.0
1,3-Dichlorobenzene	<5.0	5.0
1,4-Dichlorobenzene	<5.0	5.0
1,1-Dichloroethane	<5.0	5.0
1,2-Dichloroethane	<5.0	5.0
1,1-Dichloroethylene	<5.0	5.0
1,2-Trans-Dichloroethylene	<5.0	5.0
1,2-Dichloropropane	<5.0	5.0
Ethylbenzene	<5.0	5.0
Methylene Chloride	<5.0	5.0
1,1,2,2-Tetrachloroethane	<5.0	5.0
Tetrachloroethylene	<5.0	5.0
Toluene	<5.0	5.0
1,1,1-Trichloroethane	<5.0	5.0
1,1,2-Trichloroethane	<5.0	5.0
Trichloroethylene	<5.0	5.0
Vinyl Chloride	<5.0	5.0

VELAP# 460173
DCLS# 237



Primary Laboratories, Inc. Results

26-Mar-13

Date Sampled: 26-Feb-13
Work Order No: 1302254-04
Client ID: GAC Bkwash2

Test Description	Final Result	Reporting Limit	Units of Measure	Method Numbers*	Date Analyzed	Tech. Initials
Oil & Grease	<5.0	5.0	mg/L	EPA 1664 A	27-Feb-13	HV
Nitrate/Nitrite	0.12	0.01	mg/L	4500 NO ₃ ⁻ E	6-Mar-13 at 13:30	NA
TSS	308.0	1.0	mg/L	2540 D	28-Feb-13	HV
Fluoride	0.21	0.10	mg/L	EPA 300.0	8-Mar-13 at 20:29	ML
TDS	66	10	mg/L	2540 C	4-Mar-13	HV
Nitrate	0.12	0.01	mg/L	4500 NO ₃ ⁻ E	6-Mar-13 at 13:30	NA
Chloride	11.7	1.0	mg/L	4500CL B	5-Mar-13 at 16:30	NA
Sulfate	11.4	2.0	mg/L	4500SO ₄ ²⁻ E	4-Mar-13 at 14:00	NA

VELAP# 460173
DCLS# 237



Primary Laboratories, Inc. Results

28-Mar-13

Date Sampled: 26-Feb-13
Work Order No: 1302254-04
Client ID: GAC Bkwash2

Test Description	Final Result	Reporting Limit	Units of Measure	Method Numbers*	Date Analyzed	Tech. Initials
Metals						
Aluminum	4.810	0.050	mg/L	3120 B	6-Mar-13	HV
Antimony	<0.100	0.100	mg/L	3120 B	6-Mar-13	HV
Arsenic	<0.050	0.050	mg/L	3120 B	6-Mar-13	HV
Barium	<0.020	0.020	mg/L	3120 B	6-Mar-13	HV
Beryllium	<0.010	0.010	mg/L	3120 B	6-Mar-13	HV
Boron	<0.100	0.100	mg/L	3120 B	6-Mar-13	HV
Cadmium	<0.0003	0.0003	mg/L	3120 B	25-Mar-13	HV
Chromium	<0.020	0.020	mg/L	3120 B	6-Mar-13	HV
Cobalt	<0.020	0.020	mg/L	3120 B	6-Mar-13	HV
Copper	0.009	0.001	mg/L	3120 B	25-Mar-13	HV
Iron	0.581	0.050	mg/L	3120 B	6-Mar-13	HV
Lead	<0.001	0.001	mg/L	3120 B	25-Mar-13	HV
Magnesium	<0.020	0.020	mg/L	3120 B	6-Mar-13	HV
Manganese	0.086	0.020	mg/L	3120 B	6-Mar-13	HV
Mercury	<0.0002	0.0002	mg/L	3112 B	6-Mar-13	HV
Molybdenum	0.032	0.020	mg/L	3120 B	6-Mar-13	HV
Nickel	0.011	0.005	mg/L	3120 B	25-Mar-13	HV
Selenium	<0.002	0.002	mg/L	3120 B	25-Mar-13	HV
Silver	<0.0001	0.0001	mg/L	3120 B	25-Mar-13	HV
Thallium	<0.0002	0.0002	mg/L	3120 B	25-Mar-13	HV
Tin	<0.050	0.050	mg/L	3120 B	6-Mar-13	HV
Titanium	<0.020	0.020	mg/L	3120 B	6-Mar-13	HV
Zinc	<0.010	0.010	mg/L	3120 B	6-Mar-13	HV

VELAP# 460173
DCLS# 237



Primary Laboratories, Inc. Results

26-Mar-13

Date Sampled: 26-Feb-13
Work Order No: 1302254-04
Client ID: GAC Bkwash2

Test Description	Final Result	Reporting Limit	Units of Measure	Method Numbers*	Date Analyzed	Tech. Initials
Metals, Dissolved						
Aluminum	<0.050	0.050	mg/L	3120 B	6-Mar-13	HV
Antimony	<0.100	0.100	mg/L	3120 B	6-Mar-13	HV
Arsenic	<0.050	0.050	mg/L	3120 B	6-Mar-13	HV
Barium	<0.020	0.020	mg/L	3120 B	6-Mar-13	HV
Beryllium	<0.010	0.010	mg/L	3120 B	6-Mar-13	HV
Boron	<0.100	0.100	mg/L	3120 B	6-Mar-13	HV
Cadmium	<0.0003	0.0003	mg/L	3120 B	25-Mar-13	HV
Chromium	<0.020	0.020	mg/L	3120 B	6-Mar-13	HV
Cobalt	<0.020	0.020	mg/L	3120 B	6-Mar-13	HV
Copper	0.004	0.001	mg/L	3120 B	25-Mar-13	HV
Iron	<0.050	0.050	mg/L	3120 B	6-Mar-13	HV
Lead	<0.001	0.001	mg/L	3120 B	25-Mar-13	HV
Magnesium	<0.020	0.020	mg/L	3120 B	6-Mar-13	HV
Manganese	<0.020	0.020	mg/L	3120 B	6-Mar-13	HV
Mercury	<0.0002	0.0002	mg/L	3112 B	6-Mar-13	HV
Molybdenum	0.036	0.020	mg/L	3120 B	6-Mar-13	HV
Nickel	0.008	0.005	mg/L	3120 B	25-Mar-13	HV
Selenium	<0.002	0.002	mg/L	3120 B	25-Mar-13	HV
Silver	<0.0001	0.0001	mg/L	3120 B	25-Mar-13	HV
Thallium	<0.0002	0.0002	mg/L	3120 B	25-Mar-13	HV
Tin	<0.050	0.050	mg/L	3120 B	6-Mar-13	HV
Titanium	<0.020	0.020	mg/L	3120 B	6-Mar-13	HV
Zinc	<0.010	0.010	mg/L	3120 B	6-Mar-13	HV

VELAP# 460173
DCLS# 237



Primary Laboratories, Inc. Results

26-Mar-13

Date Sampled: 27-Feb-13
Work Order No: 1302254-05
Client ID: GAC 24hr Backwash

Test Description	Final Result	Reporting Limit	Units of Measure	Method Numbers*	Date Analyzed	Tech. Initials
Nitrate/Nitrite	0.11	0.01	mg/L	4500 NO ₃ ⁻ E	6-Mar-13 at 13:30	NA
TSS	15.6	1.0	mg/L	2540 D	28-Feb-13	HV
Bromide	0.11	0.10	mg/L	EPA 300.0	8-Mar-13 at 20:41	ML
Fluoride	0.17	0.10	mg/L	EPA 300.0	8-Mar-13 at 20:41	ML
TDS	68	10	mg/L	2540 C	4-Mar-13	HV
Nitrate	0.11	0.01	mg/L	4500 NO ₃ ⁻ E	6-Mar-13 at 13:30	NA
Chloride	11.2	1.0	mg/L	4500CL B	5-Mar-13 at 16:30	NA
Sulfate	7.9	2.0	mg/L	4500SO ₄ ²⁻ E	4-Mar-13 at 14:00	NA
MBAS	<0.100	0.100	mg/L	5540C	6-Mar-13 at 13:30	AC
Nonylphenol	<5	5	ug/L	ASTM D7065-06	12-Mar-13 at 3:57	JRA
Asbestos	ND	0.89	MF/L	TEM	4-Mar-13	AS

ND - Not detected

VELAP# 460173
DCLS# 237



Primary Laboratories, Inc. Results

26-Mar-13

Date Sampled: 27-Feb-13
Work Order No: 1302254-05
Client ID: GAC 24hr Backwash

Test Description	Final Result	Reporting Limit	Units of Measure	Method Numbers	Date Analyzed	Tech. Initials
Metals						
Aluminum	2.140	0.050	mg/L	3120 B	6-Mar-13	HV
Antimony	<0.100	0.100	mg/L	3120 B	6-Mar-13	HV
Arsenic	<0.050	0.050	mg/L	3120 B	6-Mar-13	HV
Barium	<0.020	0.020	mg/L	3120 B	6-Mar-13	HV
Beryllium	<0.010	0.010	mg/L	3120 B	6-Mar-13	HV
Boron	<0.100	0.100	mg/L	3120 B	6-Mar-13	HV
Cadmium	<0.0003	0.0003	mg/L	3120 B	25-Mar-13	HV
Chromium	<0.020	0.020	mg/L	3120 B	6-Mar-13	HV
Cobalt	<0.020	0.020	mg/L	3120 B	6-Mar-13	HV
Copper	0.006	0.001	mg/L	3120 B	25-Mar-13	HV
Iron	0.347	0.050	mg/L	3120 B	6-Mar-13	HV
Lead	<0.001	0.001	mg/L	3120 B	25-Mar-13	HV
Magnesium	<0.020	0.020	mg/L	3120 B	6-Mar-13	HV
Manganese	0.045	0.020	mg/L	3120 B	6-Mar-13	HV
Mercury	<0.0002	0.0002	mg/L	3112 B	6-Mar-13	HV
Molybdenum	0.029	0.020	mg/L	3120 B	6-Mar-13	HV
Nickel	0.009	0.005	mg/L	3120 B	25-Mar-13	HV
Selenium	<0.002	0.002	mg/L	3120 B	25-Mar-13	HV
Silver	<0.0001	0.0001	mg/L	3120 B	25-Mar-13	HV
Thallium	<0.0002	0.0002	mg/L	3120 B	25-Mar-13	HV
Tin	<0.050	0.050	mg/L	3120 B	6-Mar-13	HV
Titanium	<0.020	0.020	mg/L	3120 B	6-Mar-13	HV
Zinc	<0.010	0.010	mg/L	3120 B	6-Mar-13	HV

VELAP# 460173
DCLS# 237



Primary Laboratories, Inc. Results

26-Mar-13

Method Numbers*: EPA 625
Date Analyzed: 7-Mar-13
Technician: UL
Units of Measure: ug/L
Date Sampled: 27-Feb-13
Work Order No: 1302254-05
Client ID: **GAC 24hr Backwash**

Test Description	Final Result	Detection Limit
Acenaphthene	<5.0	5.0
Acenaphthylene	<5.0	5.0
Anthracene	<5.0	5.0
Benzidine	<5.0	5.0
Benzo(a) anthracene	<5.0	5.0
Benzo(b) fluoranthene	<5.0	5.0
Benzo(k) fluoranthene	<5.0	5.0
Benzo(g,h,i) perylene	<5.0	5.0
Benzo(a)pyrene	<5.0	5.0
bis-(2-Chloroethoxy)methane	<5.0	5.0
bis-(2-Chloroethyl)ether	<5.0	5.0
bis-(2-Chloroisopropyl) ether	<5.0	5.0
bis-(2-Ethylhexyl)phthalate	<5.0	5.0
4-Bromophenyl phenyl ether	<5.0	5.0
Butyl benzyl phthalate	<5.0	5.0
2-Chloronaphthalene	<5.0	5.0
Parachlorometa Cresol	<5.0	5.0
2-Chlorophenol	<5.0	5.0
4-Chlorophenyl phenyl ether	<5.0	5.0
Chrysene	<5.0	5.0
Dibenzo(a,h)anthracene	<5.0	5.0
Di-n-butyl phthalate	<5.0	5.0
3,3-Dichlorobenzidine	<5.0	5.0
2,4-Dichlorophenol	<5.0	5.0
Diethyl phthalate	<5.0	5.0
2,4-Dimethylphenol	<5.0	5.0
Dimethyl phthalate	<5.0	5.0
4,6-Dinitro-o-cresol	<5.0	5.0
2,4-Dinitrophenol	<5.0	5.0
2,4-Dinitrotoluene	<5.0	5.0

VELAP# 460173
DCLS# 237



Primary Laboratories, Inc. Results

26-Mar-13

Method Numbers*: EPA 625 (con't)
Date Analyzed: 7-Mar-13
Technician: UL
Units of Measure: ug/L
Date Sampled: 27-Feb-13
Work Order No: 1302254-05
Client ID: **GAC 24hr Backwash**

Test Description	Final Result	Detection Limit
2,6-Dinitrotoluene	<5.0	5.0
Di-n-octylphthalate	<5.0	5.0
1,2-Diphenylhydrazine	<5.0	5.0
Fluoranthene	<5.0	5.0
Fluorene	<5.0	5.0
Hexachlorobenzene	<5.0	5.0
Hexachlorobutadiene	<5.0	5.0
Hexachlorocyclopentadiene	<5.0	5.0
Hexachloroethane	<5.0	5.0
Indeno(1,2,3-cd) pyrene	<5.0	5.0
Isophorone	<5.0	5.0
Naphthalene	<5.0	5.0
Nitrobenzene	<5.0	5.0
2-Nitrophenol	<5.0	5.0
4-Nitrophenol	<5.0	5.0
N-Nitrosodimethylamine	<5.0	5.0
N-Nitrosodiphenylamine	<5.0	5.0
N-Nitrosodi-n-propylamine	<5.0	5.0
Pentachlorophenol	<5.0	5.0
Phenanthrene	<5.0	5.0
Phenol	<5.0	5.0
Pyrene	<5.0	5.0
1,2,4-Trichlorobenzene	<5.0	5.0
2,4,6-Trichlorophenol	<5.0	5.0

VELAP# 460173
DCLS# 237



Primary Laboratories, Inc. Results

26-Mar-13

Date Sampled: 27-Feb-13
Work Order No: 1302254-05
Client ID: GAC 24hr Backwash

Test Description	Final Result	Reporting Limit	Units of Measure	Method Numbers*	Date Analyzed	Tech. Initials
HERBICIDES						
2,4-D	<0.010	0.010	mg/L	SW-846 8151A	12-Mar-13	HV
2,4,5-TP	<0.002	0.002	mg/L	SW-846 8151A	12-Mar-13	HV

Date Sampled: 27-Feb-13
Work Order No: 1302254-05
Client ID: GAC 24hr Backwash

Test Description	Final Result	Reporting Limit	Units of Measure	Method Numbers*	Date Analyzed	Tech. Initials
Organophosphorus Pesticides						
Chlorpyrifos	<0.2	0.2	ug/L	EPA 622	13-Mar-13	JRA
Demeton	<1	1	ug/L	EPA 614	13-Mar-13	JRA
Guthion	<1	1	ug/L	EPA 622	13-Mar-13	JRA
Malathion	<1	1	ug/L	EPA 614	13-Mar-13	JRA
Parathion	<1	1	ug/L	EPA 614	13-Mar-13	JRA
Diazinon	<1	1	ug/L	EPA 614	13-Mar-13	JRA

VELAP# 460173
DCLS# 237



Primary Laboratories, Inc. Results

26-Mar-13

Date Sampled: 27-Feb-13
Work Order No: 1302254-05
Client ID: GAC 24hr Backwash

Test Description	Final Result	Reporting Limit	Units of Measure	Method Numbers*	Date Analyzed	Tech. Initials
Pesticides						
Aldrin	<0.05	0.05	ug/L	EPA 608	7-Mar-13	UL
Chlordane	<0.20	0.20	ug/L	EPA 608	7-Mar-13	UL
Dieldrin	<0.05	0.05	ug/L	EPA 608	7-Mar-13	UL
4,4-DDT	<0.05	0.05	ug/L	EPA 608	7-Mar-13	UL
4,4-DDE	<0.10	0.10	ug/L	EPA 608	7-Mar-13	UL
4,4-DDD	<0.10	0.10	ug/L	EPA 608	7-Mar-13	UL
Endosulfan sulfate	<0.05	0.05	ug/L	EPA 608	7-Mar-13	UL
Endosulfan I	<0.05	0.05	ug/L	EPA 608	7-Mar-13	UL
Endosulfan II	<0.05	0.05	ug/L	EPA 608	7-Mar-13	UL
Endrin	<0.05	0.05	ug/L	EPA 608	7-Mar-13	UL
Alpha-BHC	<0.10	0.10	ug/L	EPA 608	7-Mar-13	UL
Beta-BHC	<0.10	0.10	ug/L	EPA 608	7-Mar-13	UL
Delta-BHC	<0.10	0.10	ug/L	EPA 608	7-Mar-13	UL
Gamma-BHC (Lindane)	<0.05	0.05	ug/L	EPA 608	7-Mar-13	UL
Heptachlor	<0.05	0.05	ug/L	EPA 608	7-Mar-13	UL
Endrin Aldehyde	<0.5	0.50	ug/L	EPA 608	7-Mar-13	UL
Heptachlor Epoxide	<0.10	0.10	ug/L	EPA 608	7-Mar-13	UL
Kepone	<10	10	ug/L	8270	7-Mar-13	UL
Methoxychlor	<0.10	0.10	ug/L	EPA 608	7-Mar-13	UL
Mirex	<0.20	0.20	ug/L	EPA 608	7-Mar-13	UL
Toxaphene	<10	10	ug/L	EPA 608	7-Mar-13	UL
PCB-1016	<0.5	0.5	ug/L	EPA 608	7-Mar-13	UL
PCB-1221	<0.5	0.5	ug/L	EPA 608	7-Mar-13	UL
PCB-1232	<0.5	0.5	ug/L	EPA 608	7-Mar-13	UL
PCB-1242	<0.5	0.5	ug/L	EPA 608	7-Mar-13	UL
PCB-1248	<0.5	0.5	ug/L	EPA 608	7-Mar-13	UL
PCB-1254	<0.5	0.5	ug/L	EPA 608	7-Mar-13	UL
PCB-1260	<0.5	0.5	ug/L	EPA 608	7-Mar-13	UL
Total PCB	<0.5	0.5	ug/L	EPA 608	7-Mar-13	UL

VELAP# 480173
DCLS# 237



Primary Laboratories, Inc.
Results

26-Mar-13

Date Sampled: 27-Feb-13
Work Order No: 1302254-06
Client ID: Nanna RO Backwash

Test Description	Final Result	Reporting Limit	Units of Measure	Method Numbers*	Date Analyzed	Tech. Initials
Nitrate/Nitrite	0.09	0.01	mg/L	4500 NO ₃ E	6-Mar-13 at 13:30	NA
TSS	10.0	1.0	mg/L	2540 D	28-Feb-13	HV
Fluoride	0.13	0.10	mg/L	EPA 300.0	8-Mar-13 at 20:53	ML
TDS	70	10	mg/L	2540 C	4-Mar-13	HV
Nitrate	0.09	0.01	mg/L	4500 NO ₃ E	6-Mar-13 at 13:30	NA
Chloride	14.0	1.0	mg/L	4500CL B	5-Mar-13 at 16:30	NA
Sulfate	8.0	2.0	mg/L	4500SO ₄ ²⁻ E	4-Mar-13 at 14:00	NA

VELAP# 460173
DCLS# 237



Primary Laboratories, Inc. Results

26-Mar-13

Date Sampled: 27-Feb-13
Work Order No: 1302254-06
Client ID: Nanna RO Backwash

Test Description	Final Result	Reporting Limit	Units of Measure	Method Numbers*	Date Analyzed	Tech. Initials
Metals						
Aluminum	0.440	0.050	mg/L	3120 B	6-Mar-13	HV
Antimony	<0.100	0.100	mg/L	3120 B	6-Mar-13	HV
Arsenic	<0.050	0.050	mg/L	3120 B	6-Mar-13	HV
Barium	<0.020	0.020	mg/L	3120 B	6-Mar-13	HV
Beryllium	<0.010	0.010	mg/L	3120 B	6-Mar-13	HV
Boron	<0.100	0.100	mg/L	3120 B	6-Mar-13	HV
Cadmium	<0.0003	0.0003	mg/L	3120 B	25-Mar-13	HV
Chromium	<0.020	0.020	mg/L	3120 B	6-Mar-13	HV
Cobalt	<0.020	0.020	mg/L	3120 B	6-Mar-13	HV
Copper	0.005	0.001	mg/L	3120 B	25-Mar-13	HV
Iron	0.061	0.050	mg/L	3120 B	6-Mar-13	HV
Lead	0.001	0.001	mg/L	3120 B	25-Mar-13	HV
Magnesium	<0.020	0.020	mg/L	3120 B	6-Mar-13	HV
Manganese	0.021	0.020	mg/L	3120 B	6-Mar-13	HV
Mercury	<0.0002	0.0002	mg/L	3112 B	6-Mar-13	HV
Molybdenum	0.028	0.020	mg/L	3120 B	6-Mar-13	HV
Nickel	0.007	0.005	mg/L	3120 B	25-Mar-13	HV
Selenium	<0.002	0.002	mg/L	3120 B	25-Mar-13	HV
Silver	<0.0001	0.0001	mg/L	3120 B	25-Mar-13	HV
Thallium	<0.0002	0.0002	mg/L	3120 B	25-Mar-13	HV
Tin	<0.050	0.050	mg/L	3120 B	6-Mar-13	HV
Titanium	<0.020	0.020	mg/L	3120 B	6-Mar-13	HV
Zinc	<0.010	0.010	mg/L	3120 B	6-Mar-13	HV

VELAP# 460173
DCLS# 237



Primary Laboratories, Inc. Results

26-Mar-13

Date Sampled: 27-Feb-13
Work Order No. 1302254-06
Client ID: Nanna RO Backwash

Test Description	Final Result	Reporting Limit	Units of Measure	Method Numbers*	Date Analyzed	Tech. Initials
Metals, Dissolved						
Aluminum	0.052	0.050	mg/L	3120 B	6-Mar-13	HV
Antimony	<0.100	0.100	mg/L	3120 B	6-Mar-13	HV
Arsenic	<0.050	0.050	mg/L	3120 B	6-Mar-13	HV
Barium	<0.020	0.020	mg/L	3120 B	6-Mar-13	HV
Beryllium	<0.010	0.010	mg/L	3120 B	6-Mar-13	HV
Boron	<0.100	0.100	mg/L	3120 B	6-Mar-13	HV
Cadmium	<0.0003	0.0003	mg/L	3120 B	25-Mar-13	HV
Chromium	<0.020	0.020	mg/L	3120 B	6-Mar-13	HV
Cobalt	<0.020	0.020	mg/L	3120 B	6-Mar-13	HV
Copper	0.004	0.001	mg/L	3120 B	25-Mar-13	HV
Iron	<0.050	0.050	mg/L	3120 B	6-Mar-13	HV
Lead	<0.001	0.001	mg/L	3120 B	25-Mar-13	HV
Magnesium	<0.020	0.020	mg/L	3120 B	6-Mar-13	HV
Manganese	<0.020	0.020	mg/L	3120 B	6-Mar-13	HV
Mercury	<0.0002	0.0002	mg/L	3112 B	6-Mar-13	HV
Molybdenum	0.026	0.020	mg/L	3120 B	6-Mar-13	HV
Nickel	0.007	0.005	mg/L	3120 B	25-Mar-13	HV
Selenium	<0.002	0.002	mg/L	3120 B	25-Mar-13	HV
Silver	<0.0001	0.0001	mg/L	3120 B	25-Mar-13	HV
Thallium	<0.0002	0.0002	mg/L	3120 B	25-Mar-13	HV
Tin	<0.050	0.050	mg/L	3120 B	6-Mar-13	HV
Titanium	<0.020	0.020	mg/L	3120 B	6-Mar-13	HV
Zinc	<0.010	0.010	mg/L	3120 B	6-Mar-13	HV

JRA- James R. Reed & Associates
ML - Microbac Laboratories

AC- Analytics Corporation
UL- Universal Laboratories

AS- AmeriSci

* All methods are Standard Methods 18th Edition unless otherwise noted.

Note: All analyses are NELAC certified except where noted with a (#).

Signature: Pamela L. Bragg

Pamela L. Bragg
Laboratory Manager

Date: 3/26/13

These analytical results are based upon materials provided by the client and are intended for the exclusive use of the client. These analytical results represent the best judgement of Primary Laboratories, Inc. Primary Laboratories, Inc. assumes no responsibility, express or implied, as to the interpretation of the analytical results contained in this report. This report is not to be reproduced except with the written approval of Primary Laboratories, Inc.

VELAP# 460173
DCLS# 237



Location: North Anna	Requested by: WGB	Priority:
Requested Date:	Phone:	Date Analysis Complete:
Comment:	Sampled by: WGB	Date Approved/Released:

Bottle Types: C=Cd, Cu, Zn; PF=Phenyls Total; N=Nitrate, Nitrite; A=Ammonia; TKN, TP, COD, NO₃/NO₂; SOD=Biological Oxygen Demand
 TOC=Total Organic Carbon; TSS=Total Suspended Solids (P, NO₃/NO₂, SO₄, TDS, Chloride)
 AR=Ammonia Reactants; PP=Pesticides/PCBs

Preservatives: HCl=Hydrochloric acid; GS=Gu Sulphate; SFA=Sulfuric acid; H₂O₂=Hydrogen Peroxide; ZA=Zinc acetate; SH=Sodium Hydroxide

Tests Required: 1- D, S, P, NH₄, TKN
 2- Ammonia, TKN, TP, COD, NO₃/NO₂, TOC, TPH
 3- TSS, TDS, S, P, NO₃/NO₂, Nitrate N, Chloride, SO₄
 4- Tl and Diss Metals: Al, Ba, Co, Fe, Mg, Mn, Ni, Se, Ti, Sb, As, Be, Cd, Cr, Cu, Pb, Hg, Ni, Se, Ag, Tl, Zn - Hardness

NO-E
 757-
 221 1680

Consider
 Flow
 Temp. 4.3°C
 pH
 Turb
 Sulfide

1302254

X - PLACE AN 'X' IN THE BOX FOR SAMPLES TO BE SUBMITTED										NO ₃	NO ₂	NO ₃ /NO ₂	TPH	TOC	TSS	Test Required	Notes
System Lab Number	Sample ID	Sample Date	Sample Time	Comp	Grab	TOC	TPH	NO ₃	NO ₂	NO ₃ /NO ₂	TPH	TOC	TSS	Test Required	Notes		
-1	A	✓	GAC 241 Backwash	Tue 2-26											23.4		
-2	B	✓	Ammonia Backwash	Tue 2-26											13.4		
-3	C	✓	GAC Backwash1	Tue 2-26											123.4		
-4	D		GAC Backwash2	Tue 2-26											13.4		
-5	A		GAC 241 Backwash	Wed 2-27											23.4		
-6	B		Ammonia Backwash	Wed 2-27											13.4		

Relinquished by (Signature)	Date	Time	Received by (Signature)	Date	Time
<i>Nancy Jennings</i>	2/26/13	3:30	<i>[Signature]</i>	2/26/13	15:30

Donelson Resources Laboratory Services
 11202 Old Stage Road
 Chester, VA 23636

8-4-721-9226

Temp = 4.3°C on ice

March 15, 2013

Mr. Glenn Bishop
Dominion Environmental Biology
4111 Castlewood Road
Richmond, VA 23234

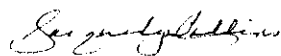
RE: Project: North Anna GAC
Pace Project No.: 3088593

Dear Mr. Bishop:

Enclosed are the analytical results for sample(s) received by the laboratory on March 01, 2013. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Jacquelyn Collins

jacquelyn.collins@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: North Anna GAC
Pace Project No.: 3088593

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4 Greensburg, PA 15601
ACCLASS DOD-ELAP Accreditation #: ADE-1544
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California/TNI Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
Florida/TNI Certification #: E87683
Guam/PADEP Certification
Hawaii/PADEP Certification
Idaho Certification
Illinois/PADEP Certification
Indiana/PADEP Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: 90133
Louisiana/TNI Certification #: LA080002
Louisiana/TNI Certification #: 4086
Maine Certification #: PA0091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nevada Certification
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188
Utah/TNI Certification #: ANTE
Virgin Island/PADEP Certification
Virginia Certification #: 00112
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia Certification #: 143
Wisconsin/PADEP Certification
Wyoming Certification #: 8TMS-Q

REPORT OF LABORATORY ANALYSIS

Page 2 of 12

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SAMPLE SUMMARY

Project: North Anna GAC
Pace Project No.: 3088593

Lab ID	Sample ID	Matrix	Date Collected	Date Received
3088593001	North Anna GAC	Water	02/26/13 10:30	03/01/13 09:00

REPORT OF LABORATORY ANALYSIS

Page 3 of 12

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SAMPLE ANALYTE COUNT

Project: North Anna GAC
Pace Project No.: 3088593

Lab ID	Sample ID	Method	Analysts	Analytes Reported
3088593001	North Anna GAC	EPA 900.0m	CJJ	2
		ASTM D5811-95	MBT	1
		EPA 906.0	CMC	1

REPORT OF LABORATORY ANALYSIS

Page 4 of 12

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PROJECT NARRATIVE

Project: North Anna GAC
Pace Project No.: 3088593

Method: EPA 900.0m
Description: 900.0 Gross Alpha/Beta
Client: Dominion Environmental Biology
Date: March 15, 2013

General Information:

1 sample was analyzed for EPA 900.0m. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

Page 5 of 12

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PROJECT NARRATIVE

Project: North Anna GAC
Pace Project No.: 3088593

Method: ASTM D5811-95
Description: 905.0 Strontium 89/90 Eichrom
Client: Dominion Environmental Biology
Date: March 15, 2013

General Information:

1 sample was analyzed for ASTM D5811-95. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

Page 6 of 12

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PROJECT NARRATIVE

Project: North Anna GAC
Pace Project No.: 3088593

Method: EPA 906.0
Description: 906.0 Tritium
Client: Dominion Environmental Biology
Date: March 15, 2013

General Information:

1 sample was analyzed for EPA 906.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

Page 7 of 12

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ANALYTICAL RESULTS

Project: North Anna GAC
Pace Project No.: 3088593

Sample: North Anna GAC Lab ID: 3088593001 Collected: 02/26/13 10:30 Received: 03/01/13 09:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0m	-0.348 ± 0.453 (1.54)	pCi/L	03/13/13 08:16	12587-46-1	
Gross Beta	EPA 900.0m	2.74 ± 1.32 (2.28)	pCi/L	03/13/13 08:16	12587-47-2	
Strontium-90	ASTM D5811-95	-0.0600 ± 0.404 (1.03)	pCi/L	03/11/13 07:26	10098-97-2	
Tritium	EPA 906.0	5252 ± 754 (257)	pCi/L	03/11/13 18:56	10028-17-8	

QUALITY CONTROL DATA

Project: North Anna GAC
Pace Project No.: 3088593

QC Batch:	RADC/14926	Analysis Method:	ASTM D5811-95
QC Batch Method:	ASTM D5811-95	Analysis Description:	905.0 Strontium 89/90 Eichrom
Associated Lab Samples:	3088593001		

METHOD BLANK:	551263	Matrix:	Water
Associated Lab Samples:	3088593001		

Parameter	Act ± Unc (MDC)	Units	Analyzed	Qualifiers
Strontium-90	0.706 ± 0.566 (1.14)	pCi/L	03/11/13 07:24	

QUALITY CONTROL DATA

Project: North Anna GAC
Pace Project No.: 3088593

QC Batch:	RADC/14900	Analysis Method:	EPA 906.0
QC Batch Method:	EPA 906.0	Analysis Description:	906.0 Tritium
Associated Lab Samples:	3088593001		

METHOD BLANK:	550543	Matrix:	Water
---------------	--------	---------	-------

Associated Lab Samples: 3088593001

Parameter	Act ± Unc (MDC)	Units	Analyzed	Qualifiers
Tritium	0.000 ± 144 (254)	pCi/L	03/08/13 06:57	

QUALITY CONTROL DATA

Project: North Anna GAC
Pace Project No.: 3088593

QC Batch:	RADC/14962	Analysis Method:	EPA 900.0m
QC Batch Method:	EPA 900.0m	Analysis Description:	900.0 Gross Alpha/Beta
Associated Lab Samples:	3088593001		

METHOD BLANK:	552792	Matrix:	Water
Associated Lab Samples:	3088593001		

Parameter	Act ± Unc (MDC)	Units	Analyzed	Qualifiers
Gross Alpha	0.364 ± 0.805 (1.89)	pCi/L	03/13/13 07:04	
Gross Beta	-1.26 ± 1.05 (2.77)	pCi/L	03/13/13 07:04	

QUALIFIERS

Project: North Anna GAC
Pace Project No.: 3088593

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty

(MDC) - Minimum Detectable Concentration

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.



Sample Condition Upon Receipt

RTL

Client Name: Dominion Env.

Project # 3088593

Courier: ☐ Fed Ex ☒ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Tracking #: 1262V9750190289308

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Packing Material: ☒ Bubble Wrap ☐ Bubble Bags ☐ None ☐ Other _____

Thermometer Used 5 6 7

Type of Ice: Wet Blue None

☐ Samples on ice, cooling process has begun

Cooler Temperature NA

Biological Tissue is Frozen: Yes No

Date and Initials of person examining contents: 4/23/13

Temp should be above freezing to 8°C

Comments:

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>NA</u>		
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13. <u>3/1/13 1220 CML WWO</u>
All containers needing preservation are found to be in compliance with EPA recommendation.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	<u>left 500ml unpres. for tritium</u>
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed <u>WFL</u> Lot # of added preservative <u>DL13-0152</u>
Samples checked for dechlorination:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution:

Field Data Required?

Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____

Date: 3/4/13

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

Client Name: Dominion

Item No.	Matrix Code	Glass Jar (120 / 250 / 500 / 1L)	Soil kit (2 SB, 1M, soil jar)	Chemistry (250 (500) / 1L)	Organics (1L)	Nutrient (250 / 500)	Phenolics (250 ml)	TOC (40 ml / 250 ml)	TOX (250 ml)	Total Metals	Dissolved Metals preserved Y N	O & G (1L)	TPH (1L)	VOA (40 ml 30 ml)	Cyanide (250 ml)	Sulfide (500 ml)	Bacteria (120 ml)	Wipes / swipe/ smear/ filter	Radchem Nalgene (125 / 250 / 500 / 1L)	Radchem Nalgene (1/2 gal. / 1 gal.L)	Cubitainer (500 ml / 4L)	Ziploc	Other	Other
81	WA			—															—					



July 5, 2013

BY U.S. MAIL
RETURN RECEIPT REQUESTED



Ms. Susan Mackert
Department of Environmental Quality
Northern Regional Office
13901 Crown Court
Woodbridge, VA 22193

RE: Dominion North Anna Power Station
Application for Reissuance of VPDES Permit No. VA0052451: Addendum #1

Dear Ms. Mackert:

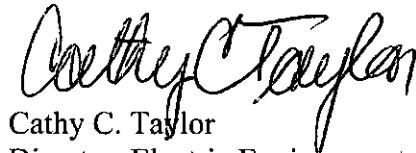
Our application for the renewal of VPDES Permit No. VA0052451 for the North Anna Power Station was submitted to DEQ on April 9, 2012. We are submitting this addendum to the application to incorporate the following changes:

1. Vacuum Priming Pumps: The Station currently has three vacuum priming pumps located in the vacuum priming house, which is located on the discharge structure at the head of the discharge canal. The purpose of the vacuum priming pumps is to draw a vacuum on the circulating water tunnel to provide a motive force for the water being discharged through the tunnel. Water is pulled from the discharge canal, run through the pumps to create a vacuum, and then drained back to the discharge canal. No chemical treatment or process exposure occurs in the vacuum priming house. Two pumps are usually in service with the third pump in standby. Each pump has a flowrate of 20 gpm with a total flowrate of approximately 40 gpm (0.0576 mgd). We request that the Vacuum Priming Pumps be identified as Outfall 116 in the VPDES permit. The applicable information is provided in the attached revised EPA Form 2C, process flow diagram and outfall location map.
2. Salt Storage Pond: A new salt and sand storage facility has been constructed as part of the site separation project (location map attached). Salt and sand are used periodically for road maintenance during winter conditions. The salt and sand will be kept in an enclosed storage building and will not be exposed to stormwater. The area around the storage building drains to a lined retention basin. Photographs of the salt storage building and pond are attached. The only material that would be exposed to stormwater would be residual salt and sand from loading and unloading activities. The pond does not have a discharge structure. The retention basin is designed to retain approximately 220,000 gallons without discharging. In most cases, the pond will be allowed to evaporate. However, in the event that there is water in the pond and a major storm is approaching, Dominion would need to remove water to provide adequate storage to

avoid a discharge to state waters. Dominion is requesting authorization to pump water from the salt storage pond to the Waste Heat Treatment Facility (WHTF) via the discharge canal as Outfall 117 on an as-needed basis to maintain adequate storage for storm events. The maximum volume discharged during a discharge event would be less than 220,000 gallons. The average flow of condenser cooling water (Outfall 101) to the discharge canal is 1838.8 mgd. Discharge from the salt storage pond would not occur on a regular basis and would occur only when necessary to avoid a discharge to Lake Anna. The applicable information is provided in the attached revised EPA Form 2C, process flow diagram and outfall location map.

Should you have any questions and/or require additional information, please contact Jason Ericson at 804-273-3485 or via email at jason.p.ericson@dom.com.

Sincerely,

A handwritten signature in black ink, appearing to read "Cathy C. Taylor". The signature is fluid and cursive, with the first name "Cathy" and last name "Taylor" clearly distinguishable.

Cathy C. Taylor
Director, Electric Environmental Services

Attachments: Form 2C, Outfall Location Map, Process Flow Diagram, Salt Storage Facility Location, Salt Storage Facility Photographs

Please type or print in the unshaded areas only

EPA ID Number (Copy from Item 1 of Form 1)
110001891114

Form Approved
OMB No. 2040-0086
Approval expires 3-31-98

Form 2C NPDES		U.S. ENVIRONMENTAL PROTECTION AGENCY APPLICATION FOR PERMIT TO DISCHARGE WASTEWATER EXISTING MANUFACTURING, COMMERCIAL, MINING AND SILVICUTLRAL OPERATIONS <i>Consolidated Permits Program</i>
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I. Outfall Location

For this outfall, list the latitude and longitude of its location to the nearest 15 seconds and name of the receiving water.

Outfall Number (list)	Latitude			Longitude			Receiving Water (name)
	Deg	Min	Sec	Deg	Min	Sec	
001	38	00	30.2	-77	43	43	Lake Anna
101	38	03	5.8	-77	47	3.1	Discharge Canal to Waste Heat Treatment Facility to Lake Anna
103	38	03	5.8	-77	47	3.1	Discharge Canal to Waste Heat Treatment Facility to Lake Anna
104	38	03	5.8	-77	47	3.1	Discharge Canal to Waste Heat Treatment Facility to Lake Anna
105	38	03	5.8	-77	47	3.1	Discharge Canal to Waste Heat Treatment Facility to Lake Anna
107	38	03	5.8	-77	47	3.1	Discharge Canal to Waste Heat Treatment Facility to Lake Anna
108	38	03	5.8	-77	47	3.1	Discharge Canal to Waste Heat Treatment Facility to Lake Anna
109	38	03	5.8	-77	47	3.1	Discharge Canal to Waste Heat Treatment Facility to Lake Anna
110	38	03	5.8	-77	47	3.1	Discharge Canal to Waste Heat Treatment Facility to Lake Anna
111	38	03	46	-77	47	13.4	Discharge Canal to Waste Heat Treatment Facility to Lake Anna
112	38	03	5.8	-77	47	3.1	Discharge Canal to Waste Heat Treatment Facility to Lake Anna
113	38	03	5.8	-77	47	3.1	Discharge Canal to Waste Heat Treatment Facility to Lake Anna
114	38	03	5.8	-77	47	3.1	Discharge Canal to Waste Heat Treatment Facility to Lake Anna
115	38	03	5.8	-77	47	3.1	Discharge Canal to Waste Heat Treatment Facility to Lake Anna
116	38	03	5.8	-77	47	3.1	Discharge Canal to Waste Heat Treatment Facility to Lake Anna
117	38	03	5.8	-77	47	3.1	Discharge Canal to Waste Heat Treatment Facility to Lake Anna
009	38	03	43.6	-77	47	31	Lake Anna
013	38	03	43.6	-77	47	24.4	Lake Anna
016	38	03	43.6	-77	47	24.4	Lake Anna
020	38	03	43.6	-77	47	24.4	Lake Anna
021	38	03	43.6	-77	47	24.4	Lake Anna

II. Flows, Sources of Pollution, and Treatment Technologies

<p>A. Attach a line drawing showing the water flow through the facility. Indicate sources of intake water, operations contributing wastewater to effluent, and treatment units labeled to correspond to the more detailed descriptions in Item B. Construct a water balance on the line drawing by showing average flows between intakes, operations, treatment units, and outfalls. If a water balance cannot be determined (e.g. for certain mining activities), provide a pictorial description of the nature and amount of any sources of water and any collection or treatment measures. See Attachment B.</p>					
<p>B. For each outfall, provide a description of (1) all operations contributing wastewater to the effluent, including process wastewater, sanitary wastewater, cooling water, and stormwater runoff; (2) the average flow contributed by each operation; and (3) the treatment received by the wastewater. Continue on additional sheets if necessary.</p>					
1. Outfall Number	2. Operations Contributing Flow		3. Treatment		
	a. OPERATION (<i>list</i>)	b. AVERAGE FLOW	a. DESCRIPTION	b. LIST CODES FROM TABLE 2C-1	
001	Discharges from the Waste Heat Treatment Facility (WHTF), which includes internal outfalls, at Dike 3	2335.8 MGD	Discharge to Lake Anna	4-A	
101	Condenser cooling water	1838.8 MGD	Discharge to discharge canal	1-O	
103	Process wastewater clarifier, including flow from the liquid radioactive waste management system Steam generator blowdown Package boiler blowdown Mat sump system Ion exchange waste Service water system high capacity blowdown (intermittent)	0.312 MGD	Ion exchange; discharge to discharge canal	2-J	1-O
104	Turbine building sumps 1, 2, & 3 Storm water Fire water system line drains Misc. discharges of purified or raw lake water from various infrequent plant maintenance activities Chiller water Service water Condensate Storage Tanks AST Containment Sump Demineralizer Sump Plant condensers Bearing cooling water Temporary package boiler blowdown	0.288 MGD	O/W separator; discharge to discharge canal Neutralization	1-H 2-K	1-O
105	Bearing cooling tower blowdown - Continuous blowdown - Lake to lake operation (intermittent)	0.084 MGD	Discharge to discharge canal	1-O	
107	Bearing cooling tower blowdown - Continuous blowdown - Lake to lake operation (intermittent) Strainer blowdown	Intermittent (has not discharge during 2008-2010 time period)	Discharge to discharge canal	1-O	
108	Service water overboard Batch blowdown overflow Straight-through cooling water Header maintenance	Intermittent (0.15 MGD for the 2008-2010 time period)	Discharge to discharge canal	1-O	
109	Hot well drain – Unit 1 Secondary system condensate	Intermittent (1.152 MGD for the 2008-2010 time period)	Discharge to discharge canal	1-O	
110	Hot well drain – Unit 2 Secondary system condensate	Intermittent (0.137 MGD for the 2008-2010 time period)	Discharge to discharge canal	1-O	
111	Unit 1 & 2 STP	0.03 MGD design daily avg flow 0.0058 MGD daily avg flow	See EPA Form 2A; Discharge to discharge canal	1-T, 1-L, XX, 3-A, 5-A, 1-U, 2-F	1-O
112	Steam generator blowdown – Unit 1	0.204 MGD	Discharge to discharge canal	1-O	
113	Steam generator blowdown – Unit 2	0.204 MGD	Discharge to discharge canal	1-O	
114	Service water tie-on vault drain	Intermittent (0.0002 MGD for the 2008-2010 time period)	Discharge to discharge canal	1-O	

115	Service water system high capacity blowdown	Intermittent (has not discharge during 2008-2010 time period)	Discharge to discharge canal	1-O	
116	Vacuum priming pump	0.058 MGD	Discharge to discharge canal	1-O	
117	Salt storage pond	Intermittent (has not previously discharged)	Discharge to discharge canal	1-U 1-O	
009	Settling pond: Groundwater; storm water; RO unit backwash; Bearing cooling tower water during maintenance activities; Ionics emergency shower wash post neutralization in holding tank	0.576 MGD	Sedimentation; Discharge to Lake Anna	1-U, 4-A	
013	Turbine building sumps #1 and #2 Stormwater Plant condensers Bearing cooling water Misc. discharges of purified or raw lake water from various infrequent plant maintenance activities	Intermittent (0.324 MGD for the 2008-2010 time period)	Discharge to Lake Anna	4-A	
016	Intake screen wash water	3.744 MGD	Discharge to Lake Anna	4-A	
020	Reverse Osmosis (RO) reject	0.216 MGD (RO reject only)	Discharge to Lake Anna	4-A	
021	RO drain line	Intermittent (has not discharge during 2008-2010 time period)	Discharge to Lake Anna	4-A	

CONTINUED FROM THE FRONT

C. Except for storm runoff, leaks, or spills, are any of the discharges described in Items II-A or B intermittent or seasonal?

☒ **X YES** (complete the following table)

☐ **NO** (go to Section III)

1. OUTFALL NUMBER (list)	2. OPERATION(s) CONTRIBUTING FLOW (list)	3. FREQUENCY		4. FLOW				c. DUR- ATION (in days)
		a. DAYS PER WEEK (specify average)	b. MONTHS PER YEAR (specify average)	a. FLOW RATE (in mgd)		b. TOTAL VOLUME (specify with units)		
				1. LONG TERM AVERAGE	2. MAXIMUM DAILY	1. LONG TERM AVERAGE	2. MAXIMUM DAILY	
107	Bearing cooling tower blowdown - Continuous blowdown - Lake to lake operation (intermittent) Strainer blowdown	Varies	Varies	No discharge during 2008-2010 time period				n/a
108	Service water overboard Batch blowdown overflow Straight-through cooling water Header maintenance	Varies	Varies	0.15 MGD	0.15 MGD	0.15 MG	0.15 MG	1
109	Hot well drain – Unit 1 Secondary system condensate	1/ outage	1/ 18 months	1.152 MGD	1.152 MGD	1.152 MG	1.152 MG	1
110	Hot well drain – Unit 2 Secondary system condensate	1/ outage	1/ 18 months	0.137 MGD	0.137 MGD	0.137 MGD	0.137 MGD	1
114	Service water tie-in vault drain	Varies	Varies	0.0002 MGD	0.0002 MGD	0.0002 MG	0.0002 MG	1
115	Service water system high capacity blowdown	Varies	Varies	No discharge during 2008-2010 time period				n/a
117	Salt storage pond	Varies	Varies	No discharge to date; <220,000 gallons				n/a
013	Turbine building sumps #1 and #2; stormwater	Varies	Varies	0.324 MGD	0.324 MGD	0.324 MG	0.324 MG	1
021	RO drain line	Varies	Varies	No discharge during 2008-2010 time period				n/a

III. PRODUCTION

A. Does an effluent guideline limitation promulgated by EPA under Section 304 of the Clean Water Act apply to your facility?

☒ **X YES** (complete Item III-B)

☐ **NO** (go to Section IV)

B. Are the limitations in the applicable effluent guideline expressed in terms of production (or other measure of operation)?

☐ **YES** (complete Item III-C)

☒ **X NO** (go to Section IV)

C. If you answered "yes" to Item III-B, list the quantity which represents an actual measurement of your level of production, expressed in the terms and units used in the applicable effluent guideline, and indicate the affected outfalls.

1. AVERAGE DAILY PRODUCTION			2. AFFECTED OUTFALLS (list outfall numbers)
a. QUANTITY PER DAY	b. UNITS OF MEASURE	c. OPERATION, PRODUCT, MATERIAL, ETC. (specify)	
N/A			

IV. IMPROVEMENTS

A. Are you now required by any Federal, State, or local authority to meet any implementation schedule for the construction, upgrading, or operation of wastewater treatment equipment or practices or any other environmental programs which may affect the discharges described in this application? This includes, but is not limited to, permit conditions, administrative or enforcement orders, enforcement compliance schedule letters, stipulations, court orders, and grant or loan conditions.

☐ **YES** (complete the following table)

☒ **X NO** (go to Item IV-B)

1. IDENTIFICATION OF CONDITION, AGREEMENT, ETC.	2. AFFECTED OUTFALLS		3. BRIEF DESCRIPTION OF PROJECT	4. FINAL COMPLIANCE DATE	
	a. No	b. SOURCE OF DISCHARGE		a. REQ- UIRED	b. PRO- JECTED
N/A					

B. OPTIONAL: You may attach additional sheets describing any additional water pollution control programs (or other environmental projects which may affect your discharges) you now have underway or which you plan. Indicate whether each program is now underway or planned, and indicate your actual or planned schedules for construction.

☐ **MARK "X" IF DESCRIPTION OF ADDITIONAL CONTROL PROGRAM IS ATTACHED**

V. INTAKE AND EFFLUENT CHARACTERISTICS

NOTE: Tables V-A, V-B, and V-C are included on separate sheets number V-1 through V-9.

[illegible]

Is any pollutant listed in Item V-C a substance or a component of a substance which you currently use or manufacture as an intermediate or final product or byproduct?

☐ **NO** (go to Item VI-B)

As radioactive releases at this facility are regulated by the Nuclear Regulatory Commission (NRC), they have not been listed here. See Attachment C for a list of other potential discharges not covered by analysis.

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VII. BIOLOGICAL TOXICITY TESTING DATA

Do you have any knowledge or reason to believe that any biological test for acute or chronic toxicity has been made on any of your discharges or on a receiving water in relation to your discharge within the last 3 years?

☒ **YES** (identify the test(s) and describe their purpose below)

☐ **NO** (go to Section VIII)

Toxicity testing and reporting have been conducted in accordance with the requirements of Part I.C.1 of the VPDES permit. For outfall 001, the permit requires chronic 3-brood static renewal survival and reproduction tests with *Ceriodaphnia dubia* and chronic 7-day static renewal survival and growth tests with *Pimephales promelas*. A summary of the test results from 2008 – 2011 are below.

Year	<i>C. dubia</i>		<i>P. promelas</i>	
	NOEC Survival	NOEC Reproduction	NOEC Survival	NOEC Growth
April 2008	100%	100%	100%	100%
April 2009	100%	100%	100%	100%
April 2010	100%	100%	100%	25%
October 2010 ⁽¹⁾	-	-	100%	50%
October 2010 ⁽²⁾	-	-	100%	100%
April 2011	100%	100%	100%	100%

(1) Using Synthetic Freshwater

(2) Using softened Synthetic Freshwater

VIII. CONTRACT ANALYSIS INFORMATION

Were any of the analyses reported in Item V performed by a contract laboratory or consulting firm?

☒ **YES** (list the name, address, and telephone number of, and pollutants analyzed by, each such laboratory or firm below)

☐ **NO** (go to Section IX)

A. NAME	B. ADDRESS	C. TELEPHONE (area code & no.)	D. POLLUTANTS ANALYZED (list)
Primary Laboratories Inc.	7423 Lee Davis Rd., Mechanicsville, VA 23111	(804) 559-9004	See Attachment D
Pace Analytical	1638 Roscytown Rd., Greensburg, PA 15601	(724) 850-5600	See Attachment D
		()	
		()	
		()	
		()	

IX. CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

A. NAME & OFFICIAL TITLE (type or print)

Daniel G. Stoddard, Senior VP Nuclear Operations

B. PHONE NO. (area code & no.)

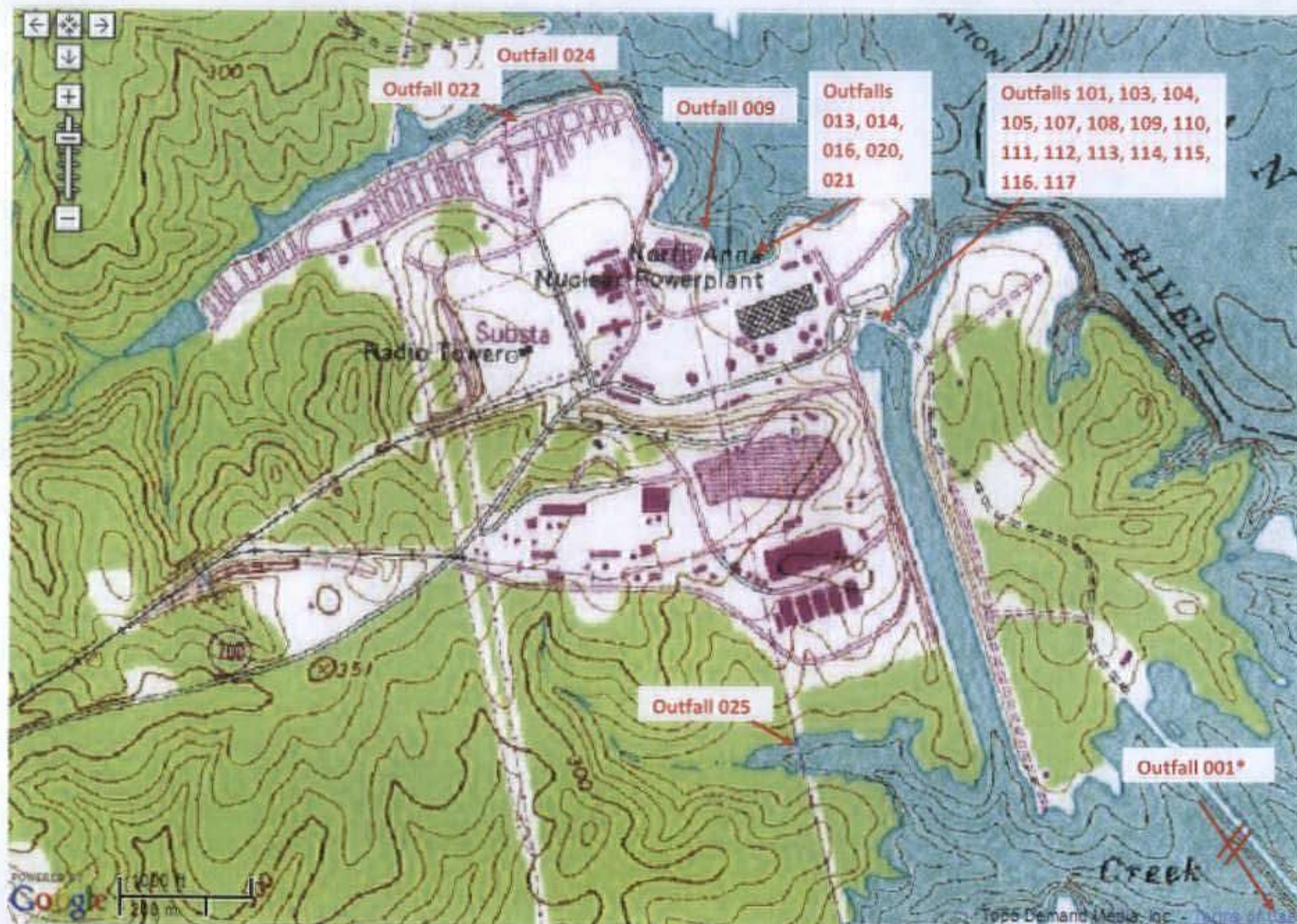
(804) 273-4390

C. SIGNATURE

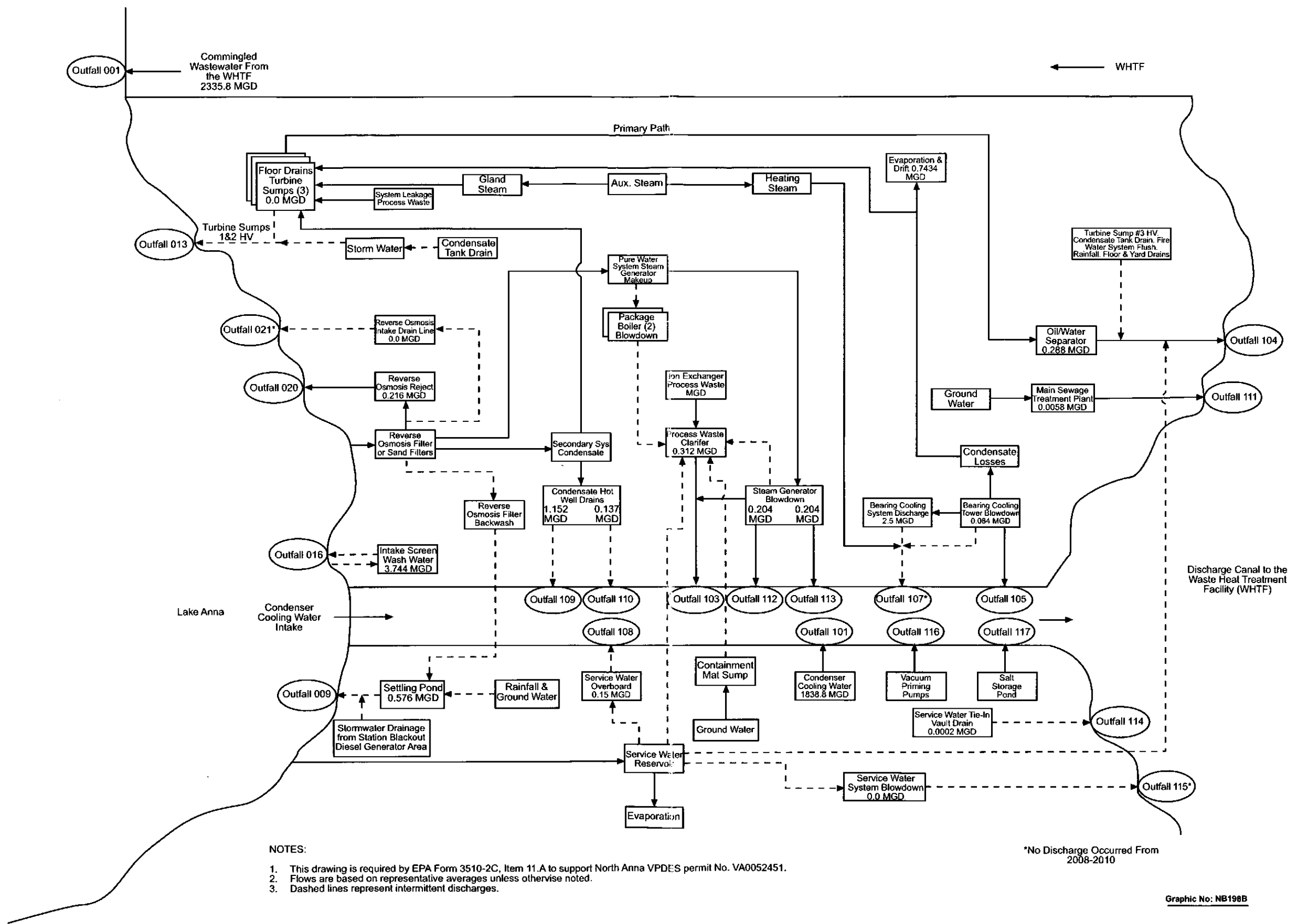
Dan Stoddard

D. DATE SIGNED

7/1/2013



*Outfall 001 is down-lake, off the WHTF Lagoon 3 dam as depicted on URS topographic map (also included in this Attachment).





North Anna Power Station (VPDES VA0052451)

Application Addendum 1; June 2013

Salt Storage Area Photographs



Salt Storage Building looking northeast



Salt Storage Pond looking east



Salt Storage Pond and Building looking west